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TRIUMPHAL ARCHES FOR AMERICAN CITIES

Arches of Ancient Origin—To Commemorate Events and Persons—Symbolism Involved—New York Has Only Arches in the United States—Few Modern Arches in Europe—Their Number Bound to Increase

By Charles de Kay

To men in widely different conditions of civilization it has seemed a natural thing to raise an arch in honor of some person whom a community delights to welcome; yet the idea must have taken long to evolve, and sprang from somewhat complex conditions.

ORIGIN OF THE TRIUMPHAL ARCH

There is little to recommend the generally received idea that the triumphal arch arose from a fashion of decorating the gate of a city against the return of a conqueror, although in its simplest form the arch does appear to symbolize a door or portion of a house which has been decorated in one way or another by the people at home, in order to testify their joy at the return of someone who has given them reason to be proud of him. Nevertheless the triumphal arch appears to have started independently of city gatherings. It was a symbol in itself, whether a crude structure of two posts and a cross-bar, or the very elaborate marble buildings erected at Rome to commemorate victories and at the same time form a monument to some member of the imperial family. Naturally enough, the specimens that are extant belong to the latter class, since they are built enduringly of stone; but their existence in such costly material testifies to many forerunners in perishable form which were erected in much the same way as was the temporary structure at New York in honor of the American Navy, built after the designs of Mr. Charles R. Lamb, to add splendor to the greeting given by New York to Admiral Dewey and the sailors of the Philippine fleet.

Another example of a temporary arch was shown at Berlin a year or so ago, when a tall arch with three openings was erected on Unter den Linden, its walls thatched with fine branches and its towers set with growing bay trees in pots.

WASHINGTON ARCH, NEW YORK CITY

Whether the fashion of triumphal arches was original in Rome we do not know. Since many other things in religion, ceremonial, augury and domestic life were borrowed from the Etruscans, perhaps the latter were the originators. They were the exemplars to the early Romans in matters of state and pomp as well as statecraft, until the latter began to wage wars outside of Italy and came in contact with the Greeks and Asiatics.

The knowledge of the principle of the arch and perhaps the invention of the true arch composed of wedge shaped blocks held in place by their own weight without the aid of mortar can be attributed to the Etruscans. Their tombs show the first beginnings of vaults composed of stones overlapping and gradually meeting at the top. They show the false arch carved out of such overlapping stones, but they also afford many instances of the perfect arch built of dry masonry which supports itself when the keystone is put in place. The Great Sewer of Rome, which shows the perfection of arch and vault, is attributed to Tarquin, one of the Etruscan Kings of early Rome. So that it is at least reasonable to suppose that the idea of an independent arch erected for no common or useful purpose, but solely for pomp and as a symbol, came from the same people who taught the Romans not only the arch principle in architecture, but their religion, augury, and arts of civilization as well. That there should be no specimens of Etruscan arches of triumph extant is not surprisng, since it is with difficulty that we can reconstruct an Etruscan city or villa. It is only through the tombs they left and some wall paintings, bronzes and picture-clad vases that we know them at all.

SOLDIERS AND SAILORS ARCH, PROSPECT PARK, BROOKLYN

USED FIRST BY THE ETRUSCANS

The highest point reached by the triumphal arch in the city where so far as we are sure it was a native, was the Arch of Trajan, which formed the entrance to the forum built by that Emperor. There were seven others in the complex of forum, basilica and temple beside the famous column which still exists, and this wealth of arches testifies, as well as any other feature, to the culmination of Rome's glory as the center of the western civilized world.

I would like to draw a parallel between Rome and Egypt, with the memorial pillar and triumphal arch on one side and the obelisk and pyramid on the other.

The memorial pillar, like the obelisk, is a symbol of energy and sunrise; it is the male. The triumphal arch, like the pyramid, is a symbol of fruition and sunset; it is the female. The one is active, the other passive. The pillar and obelisk are like the spear of the warrior planted in the ground, while the triumphal arch and the pyramid are like the house or tent where the warrior rests. The memorial pillar is inscribed with the deeds of the warrior, while the triumphal arch represents the house or the city garnished to console him for his hardships. The Egyptian temple, preceded by its obelisks and entered through pylons, is a similar combination still nearer the pillar and triumphal arch of the Romans, and it is easy to trace the same fundamental idea to the detached tower and main portal of Christian churches, until they combine in the ordinary ecclesiastical edifice we know as a church, where the spire is part of the building.

SYMBOLISM INVOLVED

Symbolism of this kind is rejected by many persons because they think the builders of old did not have any such ideas to guide them. And it is probable that only in the rarest cases were they conscious of the underlying origin, being content to follow tradition and build as former architects built.

They builded "deeper" than they knew,
The conscious stone to beauty grew.

Be that as it may, the starting point of the triumphal arch was Italy, and, so far as visible remains teach us, the city of Rome. All ages are agreed that the triumphal arch forms one of the most perfect monuments to embody the gratitude of a community for services rendered it in war, partly because of the symbolism alluded to, partly because of its ornamental quality in connection with the architecture of a city, and no less because of the variety of embellishment a structure of the kind can support without appearing to be overloaded. It is not a thing for use, but for beauty. It is a huge frame for statuary, a pedestal and background for many monuments. The very fact that it is not utilitarian sets it apart from architecture proper and places it at the summit of decoration in its most dignified and majestic culmination.

A triumphal arch is a luxury which only rich commonwealths can afford. It marks an era. It tells of a people among whom art is at home, who have came to realize that money is not ill spent which makes their city worth a visit on the part of other men.

NEW YORK HAS ONLY ARCHES IN UNITED STATES

Greater New York has only two triumphal arches at present, the one in Washington Square, Manhattan, and the other at the entrance of Prospect Park, Brooklyn. Had it not been for a series of unfortunate accidents, it might have had a third by this time, the Naval Arch which stood long enough in plaster at Madison Square, Manhattan, to be judged and found worthy of translation into stone.

It is well to remember that triumphal arches are no new thing in America, although our commonwealths are only now rich enough to expend the sums necessary to make them permanent. In the time of Washington they were erected in his honor, and they have been used ever since. One of the latest of this sort was built of wood on Fifth avenue, Manhattan, and again it was Washington whose memory was recalled thereby. More fortunate than the Naval Arch, it has been translated into marble and stands on Washington Square, finished so far as the architecture is concerned, but, alas! devoid of its decorations, one might almost say, of its reason for existence, because of the lack of sculpture. There it is, striding across the northern entrance to the square, its attic gleaming white among the trees as one comes southward down Fifth avenue, waiting for the time when the citizens of New York shall feel ashamed of its nakedness and crown and clothe it with the statuary which tells of the struggle of a little folk for independence.

There is no reason to believe that triumphal arches are not appreciated in the United States. The fact that the Naval Arch has failed to elicit a sum large enough to erect it permanently in the best material can be explained by conditions which existed at a certain date for that arch alone and need not obtain hereafter. This is the time for a renewed attempt to raise a fund to make it actual.

IN THE ORIENT AND ELSEWHERE

When we look abroad we find outside of ancient Italy the Japanese who have the triumphal arch in a peculiar form connected with temples. The torii of Japan is a wooden arch like an ornamental gateway found near Shintoo temples which may be a survival of the time when the greater part of Japan was peopled by the Ainu race, now only found in the north, some of whose carved wood ornaments for the graves of women suggest remotely the arch. Neither Greeks nor Persians appear to have used the arch, the instances found in Greece belonging to the period after Rome had conquered Hellas and introduced some of her fashions. When Gaul, filled with rival, warring communities of Kelts and Iberians had been conquered piecemeal by Julius Cæsar, who understood to perfection the rule of "divide and conquer," the country knew for the first time what it was to be a united land and for the first time felt the advantages of peace, good roads and commerce. Then began the great era of building. Rome had to appoint censors in the chief towns which survived the

THE NAVAL ARCH, USED IN DEWEY CELEBRATION IN NEW YORK CITY

wars, in order to prevent the ambitious communities from ruining themselves by the erection of costly temples, theatres, baths and triumphal arches. Following the example and precept of Rome, all Gaul began to turn her wood and wattle towns into stone. Then it was that the triumphal arches at Rheims, Orange and other points, chiefly in the old Roman province of the south, were erected. And when France emerged in the last century from the wars under Napoleon, the renewal of the impulse from Rome, which Napoleon had so powerfully aided, was the occasion of the establishment of two arches in Paris, which have set the fashion for others in distant parts of the world.

Russia, Austria, Germany and Spain have no modern triumphal arches of any importance or beauty, neither has Great Britain; for the specimens at Berlin, Munich and London are singularly lacking in the proportions and artistic grace that seem inseparable from a monument of the kind. A modern arch exists in Northern Italy in memory of Napoleon which has a style of its own. It seems reserved

TEMPORARY ARCH IN BERLIN, GERMANY, ON UNTER DEN LINDEN

to America to take up the fashion where France left it in the century just gone by and use this element of city decoration with a freedom unknown since the days of the Roman emperors.

OPPORTUNITIES IN NEW YORK AND ELSEWHERE

New York is not planned with much felicity for any kind of decoration, but there are certain points where triumphal arches are appropriate, because there they will meet the requirements. These requirements are, that they shall not stand in lonely, little frequented places like cemeteries, parks, or on hills at a distance from the crowd, but in the busiest thoroughfares of the city, because they are meant to be seen by the swarming citizens; such memories as they suggest, such art as may decorate them should be for the public and at close range.

A spot of this kind is the northern end of Bowling Green, where the arch would be a forerunner of the Custom House, to be completed next year, and look well in projection against its façade, and near the Produce Exchange and the tall buildings on Broadway. Another place is the south side of Union Square, looking down Broadway, as the arch at the Bowling Green would look up Broadway. A third spot is the one so cleverly chosen for the Naval Arch, spanning Fifth avenue at Twenty-fourth or Twenty-fifth street; a fourth, the rise of Fifth avenue at Thirty-eighth. Another axis for such arches would be Riverside Drive and the new causeway that will soon permit access to the upper section of Manhattan island along the Hudson. The small squares at the approaches to Washington Bridge over the Harlem might in time afford appropriate sites for arches, but for the present other sites in more populous sections of the city should be preferred. In fact too many triumphal arches would be a mistake, supposing such costly luxuries could be afforded. Rome is said to have possessed twenty-one, but Rome in imperial times was too lavish for good taste.

Arches are not to be found outside Greater New York, not even at Washington, but their erection is much to be desired, if only as a stop to the meagre decoration in sculpture which most of our cities can boast and a change from the ordinary soldiers' and sailors' monument, the equestrian memorial, and other conventional records. They encourage in a country as hardly another building can the art of sculpture, forcing sculptors to design with freshness under the limitations as to place and pose forced on them by the necessities of the case. This was seen in the sculpture of the temporary Naval Arch, where the excellent, the good and the poor stood side by side for judgment, and it needed no great acumen to point out the groups and single figures which were worthy of perpetuation, those which required more study and those which should be absolutely rejected.

The Naval Arch should be erected in New York as a beginning, and in good time, when funds are available, others should be added to the embellishment of the city. Three arches spanning Fifth avenue at intervals between Washington Square and Central Park might be termed a luxury, and so they will be a luxury from one point of view; but they will be an investment also, in the sense that embellishments of a city attract and keep citizens. And what is true of New York is true of other cities of the Union. It is not essential that the arch should be classical, follow that of Drusus, or Titus and Vespasian, or Constantine or the Arc de l'Etoile at Paris; it may be mediaeval or still more modern in spirit. The main things are that it shall be beautiful, consistent with its surroundings and a vehicle for the fine arts.

CONDITION OF GARBAGE DISPOSAL IN UNITED STATES

Lack of Trustworthy Records—Work of Crematories and Reduction Plants—English Methods and Practice Superior to American Usage—Evils of Short-Term Contract—Philadelphia a Notorious Bad Example—Pertinent Suggestions

By M. N. Baker*

In no branch of the municipal service has so little progress been made in the United States as in the disposal of garbage. In no other department of municipal activity is the service so inadequate, the methods employed so haphazard, the cost so far in excess of value received. Litigation over the award of contracts and on account of alleged nuisances are common, and over the whole subject there is frequently a cloud of suspicion as to whether the various transactions are not carried on with an eye to personal and political advantage rather than in behalf of the interest of the people at large.

THE REASONS WHY

Why do such conditions exist? First, because the sanitary importance of a thorough system of garbage collection and disposal is appreciated by neither the general public nor by the city officials; second, because it is seldom recognized that the problems incident to final disposal are largely engineering in character and, therefore, should be entrusted to engineers.

Although this paper is devoted to the ultimate disposal of garbage, it may be said in passing that the collection of this class of waste in a thorough and sanitary manner is a question of ample appropriations; a good equipment of covered metal carts, subjected to thorough cleansing and disinfection; suitable and well-kept horses; efficient men, and a business-like administration of the whole department. How rarely this combination is found in American cities is only too well known.

LACK OF TRUSTWORTHY RECORDS

The sanitary and economic disposal of garbage is beset with difficulties and doubts. To begin with, comparatively few American cities keep trustworthy records of the quantity of garbage produced day by day. In fact, it is only where there is an efficient system of collection, either by the city or under its careful supervision, that such records are possible. Quantity records, even where regularly kept, are but rough approximations at best. Most frequently they are mere estimates, reported variously in different cities as loads, one and two-horse loads, cubic yards, or tons. Where conversions from loads to other units are made the basis is most likely to be an estimate, the manufacturer's rating of cubical contents, or some old experimental weighing of a few loads. Obviously, such records are liable to gross inaccuracy. Partially full carts are often reported as full.

Meager and defective as are the records of quantity, they are much more satisfactory than the available knowledge of the composition of these wastes. A few scattering analyses have been made to determine the component parts of the garbage of American cities. All else is mere guess work.

IMPORTANCE OF ACCURATE FIGURES

The importance of accurate figures giving the quantity and composition of garbage lies in the fact that the lack of such figures is a serious handicap in choosing between different means of disposal, in designing works, and in operating plants that have been put in service. A knowledge of the quantity of moisture to be evaporated before garbage can be burned, and of the combustible matter in the garbage, on the one hand, and, on the other, information as to the grease and fertilizing material available for possible recovery by some rendering process, is essential to a wise choice between cremation and reduction. And yet in the past five years, contracts involving millions of dollars have been let in complete ignorance of these facts.

Without reliable figures as to quantity and composition no city is in a position to know the unit cost of its garbage disposal service, or to compare its results with those obtained in other cities. It is true that figures purporting to give the cost of service are put out from time to time, but except for occasional yearly totals they are generally quite untrustworthy. Even the totals are seldom accurate, except where the work is done by contract.

REDUCTION PLANTS

All the reduction plants thus far built are owned and operated by private companies. The cities which they serve are kept in ignorance of the first cost of the plants, of the operating expenses, and of the revenue from the grease and fertilizing materials recovered from the garbage. This is all very well for the companies, but inasmuch as they claim as one of the advantages of their system that it is cheaper than cremation, it would be well for the city if it had some means of checking these claims. It may be urged that the best possible check is competition at the time of awarding contracts. Unfortunately, genuine competition is rarely known. Adequate specifications are seldom submitted to prospective bidders. No two bids are on a strictly comparable basis. Moreover, in many instances, there is no formal call for proposals. The various points at issue are settled either after a mere jaunt of some hundreds of miles to inspect existing disposal works, or else after public and private conferences with agents of rival companies. The conference, particularly the private ones, are too apt to take place in any event.

Under such circumstances it is no wonder that the average city is quite helpless in the matter of obtaining adequate sanitary garbage disposal service at reasonable cost. It knows little of the real quantity and composition of the material of which it wishes to be rid, neither it nor its sister cities have ever operated a reduction plant, and the conditions of awarding garbage contracts do not afford real competition between the two main rival systems—reduction and cremation—or between the individual claimants in each class. To crown all, complicated technical questions are answered, or left unanswered, by laymen, instead of being submitted to competent engineering advisers.

GARBAGE CREMATORIES

While our cities have had no direct experience with the operation of reduction plants they have had all kinds of experience with garbage furnaces. Whether or not the reduction plants operated by private companies are economic successes or failures the municipal public can only surmise; that most of the American garbage furnaces have been financially burdensome, many a city can testify from its own experience.

In England, the refuse destructors, as they are there called, not only require no extra fuel, if reports be true, but the heat from the burning wastes generates steam which is put to a variety of uses.

In the United States, instead of utilizing garbage as fuel, we use tons of good coal to consume the garbage. There have been two or three installations for which it was claimed that little or no coal was required, and one or two quite recent attempts have been made to utilize heat from garbage furnaces. These are exceptions to the general rule.

DIFFERENCES BETWEEN AMERICAN AND ENGLISH GARBAGE

It must be understood that the English refuse is a mixture of garbage, ashes and other household wastes, and includes a large percentage of partly burned coal and other combustible refuse. Many, probably most, of the garbage furnaces in the United States receive wastes from which at least ashes have been excluded. One of the things yet to be learned about garbage cremation in America is what results can be obtained with mixed refuse, burned in furnaces of the English type. It is generally considered by observers who are both capable and impartial that the English garbage furnaces are far in advance of the American. If so, why do not some of our cities adopt the English type? Why do not the American makers

* Associate Editor of *Engineering News*. Mr. Baker read this paper before the fifth annual convention of the League of American Municipalities, held at Jamestown, N. Y., August 21-24, 1901.

model their furnaces upon the most approved English lines? At least a partial answer to both these questions is that the United States engineers have rarely been called upon, either by cities or by furnace manufacturers, for advice or assistance in the designing of garbage furnaces. The case, so far as promoters are concerned, is different with reduction processes, but it would be hard to name a sanitary or mechanical engineer of national reputation who was ever prominently connected with the design of an American garbage disposal plant of either the cremation or reduction type. No wonder that garbage disposal is in so unsatisfactory a condition!

EVILS OF PRESENT PRACTICE

All that has preceded relates to attempts at improved means of garbage disposal. The worst is yet to be said. The vast majority of American cities make no pretence of employing other than the most primitive methods of disposal. It is in this failure that the unsanitary condition of the garbage disposal service, or lack of service, chiefly lies. Aside from the evils unavoidably attendant upon dumping large quantities of garbage on land or at sea there is the greater evil that where the means of disposal are unsatisfactory the collection is almost sure to be shamefully neglected.

Every town and city having a population of say 5,000 to 10,000 needs a regularly organized and efficient garbage collection service under rigid municipal supervision, or else carried on by the municipality itself. Each town having more than the merest makeshift of a garbage collection service should have some other means of final disposal than promiscuous dumping. And yet in what a small percentage of the towns above even 10,000 population is the garbage collected regularly; and of these few how many fewer utilize garbage furnaces or reduction works!

I have not attempted to burden this paper with statistics, but there is now being compiled under my direction information relating to both the collection and disposal of garbage in all cities and towns of the United States having a population of 3,000 and upwards by the census of 1900. Probably a summary of this information will be available for inclusion, if desired, in the proceedings of this convention.

THE INIQUITOUS SHORT-TERM CONTRACT

There remains for notice one important cause for the unsatisfactory condition of garbage disposal in the United States. It is so very important that I wish to give it the prominence of separate mention. I refer to the short-term contracts so common throughout the country. Perhaps Philadelphia is the most notorious example of the sort. Year after year, in the latter part of November or early in December, it receives bids for the collection and disposal of garbage for the ensuing calendar year. Since improved means of disposal have been adopted in that city the contract has been falling, each year, more and more surely into the hands of the same contractor. The period between the reception of bids and the beginning of work under the contract is too short for any one to secure a site and erect a plant. Even if there were ample time in this respect, no man without a decided political pull could take a one-year contract at a price that would not stagger any city; for without being sure of the renewal of the contract, the whole first cost of the plant, as well as the cost of service, would have to be included in the bid. A five-year contract is none too long and a contract for eight or ten years, if properly safeguarded, would be more advantageous to both city and contractor. It is to be noticed, however, that at the expiration of most of the five and ten-year contracts heretofore made one of two things have occurred: Either the call for bids has been postponed until everyone but the holder of the old contract, with his plant in running order, is shut out, or else there has been a disgusting struggle between two or more factions in the city council. These struggles are frequently accompanied by lawsuits and sometimes continue for years before the matters at issue are settled. A case in point is Milwaukee. Furnaces are at last being built by the city, but not until after years of political and legal conflict.

PERTINENT SUGGESTIONS

I will now summarize a few of the points that should be borne in mind if garbage disposal conditions in the United States are to be notably improved: (1) Hundreds of cities and towns with practically no service, and hundreds of others with very defective service, must establish either cremation or reduction systems. (2) The problems involved are so largely technical, and have received so little scientific attention in this country, that competent engineers should be asked to solve or assist in solving them. (3) Every opportunity should be embraced, in fact opportunities should be created, to secure more extended and reliable information regarding the amount and composition of American garbage, and the possibilities of the various means of disposal in vogue at home and abroad. The latter inquiries should be directed particularly to a determination of the relative advantages of cremation and reduction, in both their sanitary and economic aspects. Are the two processes equally sanitary and is garbage best utilized, if at all, as a fuel, or as a source of grease and fertilizing material? Such work as this might well be taken up by State boards of health, perhaps in conjunction with State boards of agriculture. (4) Contracts should be for a sufficient term of years to avoid the alternative of excessive prices on account of the necessity of quickly recovering the whole first cost, or, on the other hand, depending on political influence for a renewal of the contract. The difficulties involved might be lessened by providing for purchase by the city, or successful new bidder, at the expiration of the contract. Finally, I leave with you the question, would municipal ownership at the start be better than the contract system?

HOW GRAND RAPIDS DISPOSES OF ITS GARBAGE

Uses Engle Incinerator—Costs Thirty-four Cents a Ton—Novel Contract Scheme Employed for Collection—House holders Pay for Removal—Contractor Furnishes Free Cans—Works Satisfactorily

By William DeLano*

THERE is, perhaps, no subject of municipal sanitation beset with more perplexities than has surrounded the successful disposal of city refuse and garbage. Both the reduction method of converting certain separated garbage into grease and fertilizer and the cremation method have been open to objection. Primarily the sanitary side of any system of disposal should be considered and nothing should be allowed to interfere with this side of the question.

No reduction process or cremation furnace can ever be successful that does not give immunity from nuisance in performing its work. When a sufficient amount of garbage, say from a city of 200,000 or upwards, can be satisfactorily separated from other substances, and be so treated by mechanical and chemical agencies as to be without odor sufficient to render it a nuisance, evidently the reduction process has a greater value than the cremation method.

REDUCTION AND CREMATION PROCESSES

Reduction has demonstrated its ability to secure a percentage of value of the garbage treated, but does not provide for a large proportion of city waste, not eligible to be used in the reduction plant.

Cremation has the advantage of insuring the entire destruction of waste and garbage in an entirely sanitary manner without creating any nuisance or odor.

* Health Officer of Grand Rapids, Mich., who read this paper before the fifth annual session of the League of American Municipalities, held at Jamestown, N. Y., August 21 to 24, 1901.

The principal objection to cremation has been, as I understand the case, the inability to utilize the waste heat, which objection, I believe, has been largely overcome as shown by recent experience.

I believe that with the late methods of straining tanks, removing the water from the garbage and then evaporating the water with waste heat (as planned in some of the lately built furnaces) and with the possibility of utilizing the waste heat in garbage furnaces for the purpose of furnishing power for other municipal utilities, the cost of the cremation of garbage will be reduced to a minimum. From a sanitary point of view, to my mind the most important one, the cremation method, which has been in operation in our city for the past three years, is entirely satisfactory. I shall describe our method of collection and our disposal plant as briefly as possible, it being a method both of collection and disposal which is proving very satisfactory to us.

GRAND RAPIDS' METHOD DESCRIBED

By the terms of the garbage ordinance of our city the Board of Health is given power to enter into contract with a person or persons for the purpose of furnishing proper vessels or tanks for the reception of garbage and for furnishing the necessary vehicles and equipment for its collection and removal to the crematory.

The person or persons entering into such contract receive a license issued by the mayor, and no other license may be issued to any other person or firm for this privilege, such licensed contractor being under bond for the proper performance of his work. This licensed contractor receives no compensation whatever from the city, but is permitted to make arrangements with the citizens in the various garbage districts for furnishing, at his expense, galvanized iron, watertight cans, with tightly fitting covers, for the reception of garbage and for its removal to the crematory.

Provided, however, that in no case shall the householder be subjected to a greater charge than ten cents per week for such service and the rate for hotels and restaurants shall not be greater than one dollar per week. Collections are required to be made as often as the health officer may direct.

MANNER OF MAKING COLLECTIONS

The collection is made in the following manner: Three to six times a week in the down town districts and two to three times a week in the outlying residence districts.

The wagons leave the barns at 6 o'clock in the morning, each wagon being loaded with cleaned and sterilized cans. Each driver is numbered and charged with cans enough to cover his route, the cans being numbered with the same number as the driver so they can be traced if any efficiency is reported. At each stopping place on his route the driver leaves a clean can and collects the full one. Each driver is supposed to collect from twelve to fifteen hundred cans per week. The loaded wagons are driven to the crematory and emptied, the unclean cans exchanged for clean ones and so on in rotation.

A card with streets and numbers of each driver's route is kept in the office, the drivers carrying a corresponding route book so it is possible to locate all wagons at all times and in case of trouble, easy to fix the responsibility where it belongs. This system of collection has been in operation in our city for the past three years and its working has been very satisfactory.

ENGLE CREMATORY USED

Our crematory is a double burner of the Engle pattern, each side having a capacity of fifty tons per day. The furnace is constructed of fire brick blocks, made of Pennsylvania fire clay. The grate bars used in the furnace are also constructed of fire clay blocks, ten blocks making one bar and dovetailing together in a manner to insure great strength.

These grate bars are for the reception of garbage as it is deposited in the furnace from the several openings in the floor above for that purpose, and are placed three inches apart, running across the furnace and arched in the center, about a seven-inch raise.

The garbage deposited on these grate bars drains its moisture into a lower pan where the heat and flame, both under and over, as described later, soon evaporates it.

NO FORCED DRAFT NECESSARY

The furnace is a scientific air furnace, no forced draft of any kind. We have two fires in each side, one in the center and one in the end of the furnace. The flame from the center, or main fire box, passes over the garbage that has been stoked into the pan and under the garbage that is on the grate bars, thereby drying the freshly added garbage while consuming the garbage which has been stoked down by the fireman. The flame from the main fire box meets the flame from the end fire box, thereby changing its course and in its return passing over the garbage on the grate bars. Note that the newly added garbage has a flame both under it and over it. This flame then passes to a back chamber at the extreme other end of the furnace where a small fire is kept burning which consumes all gases as the heat passes out under the pan containing the stoked garbage to the stack. As it passes to the stack it heats the pan, a fire tile floor one inch and a half in thickness, and thoroughly consumes the stoked garbage not previously burned, thus entirely destroying every particle of garbage in the furnace. This arrangement while very simple is very effective and consumes every particle of every kind of garbage deposited in the furnace.

AMOUNT AND COST OF INCINERATION

We burn daily from fifty to sixty tons of mixed garbage. During the year of 1900 there were consumed in this burner approximately 11,000 tons of garbage at an average cost for fuel and labor of thirty-four cents per ton. We employ four men at the burner, viz., two firemen, one man to charge the furnace with garbage and one man to clean the furnace at night and get ready for the succeeding day's burning.

We use as fuel soft coal, at a cost of $3 per ton, and an average for the year 1900 demonstrated that one ton of coal consumed twenty-two tons of garbage.

From twenty-five tons of garbage we derive one ton of ashes. These ashes are valuable as a land fertilizer, an average from a number of analyses showing them to contain 2.72 per cent. of (K_2O) potash and 4.24 per cent. of (P_2O_5) phosphoric acid.

Their value as fertilizer has been practically proven by our nearby farmers and it is believed that the operating expenses of our plant might be materially decreased were we to prepare and market these ashes.

MAYORS TALK ABOUT MUNICIPAL OWNERSHIP

F. W. DABNEY, MAYOR, HOPKINSVILLE, KY

"I am not in favor of the ownership of public utilities, unless the management and full control could be operated on strict lines of business similar to first class dry goods houses, when I should say yes. But it seems in such matters that councilmen and other officials often permit themselves to be guided by what is known as 'politics.' Then incompetent men, corrupt methods and such like obtain, and, of course, failure comes."

H. W. LYNCH, MAYOR, PEORIA, ILL

"I favor municipal ownership when public sentiment will sustain a non-partisan board of managers of these natural monopolies so that they can be operated on a business basis and entirely separate from politics."

N. RICHARDSON, MAYOR, LITTLE FALLS, N. Y

"As to the municipal ownership of gas, water works, etc., I am not fully decided as to what is best. I rather favor private ownership, especially if the city council is corrupt and give too big a price for the light and water. Private corporations can furnish such things for much less than a municipality."

M. WILSON DART, MAYOR, NEW LONDON, CONN

"In reply to the question whether or not I favor municipal ownership of public utilities, I would say to some extents, yes.

"We own our water works service and it is surely a paying investment. I see no reason why all our city operations should not be controlled by the city, as we are the people and do business in a businesslike way."

FIRE-PROOFING METHODS FOR BUILDINGS

PART III

Importance of Protecting Columns and Girders—Value of Air Spacing—Thick and Thin Partitions—Wood Can Be Protected—Classes of Roofs and How Treated—Ceilings Under Roofs—Furring and Lining Walls—Fire-proof Wood

By J. W. Howard, B. L., C. E

THE next division of the subject treats of how to protect columns, girders and beams. It is best to state, for clearness, that the columns are all the vertical supports, whether in the walls or detached as pillars, and that the girders are the principal horizontal elements of the frame which sustain the walls, or other weights upon them, or attached to them, such as the ends of the beams and floors.

COLUMNS AND GIRDERS MUST BE PROTECTED

The protection of the columns and girders against heat from a fire is of the greatest importance, because, when heated to even a moderate degree, they easily bend under the loads upon them. It is not necessary that the building itself burn to do this damage. It can be done

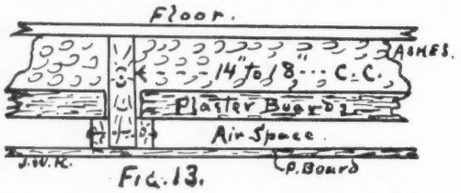


Fig. 13.

by a fire fed by the furniture and contents of the building; for there are many cases where the contents of a fire-proof building have sustained a fire, once started, and to the great damage of poorly fire-proofed construction. In such cases the first portions of the frame to suffer are the columns and girders.

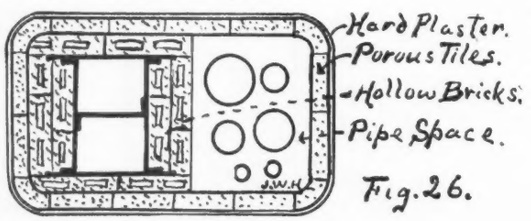


Fig. 26.

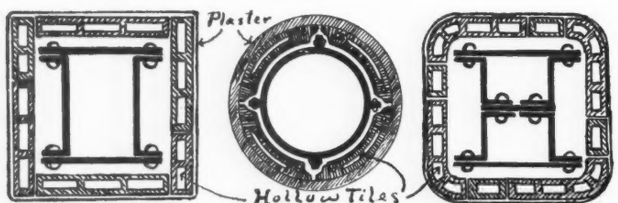


Fig. 27 Fig. 28 Fig. 29.

We need not dwell upon the methods of fire-proofing the beams, because they are protected generally by the same blocks, tiles or other material used to make the floors fire-proof, as indicated in Figs. 1 to 11, as shown in July and August issues. In the cases of concrete floor construction, the beams are usually protected by having the concrete envelop their lower portions and sides, as in Figs. 15 and 18, as shown in the August issue; or, by plastered wire lathing, expanded metal and equivalents, suspended below the beams, as shown in Figs. 20 to 25 of the August issue.

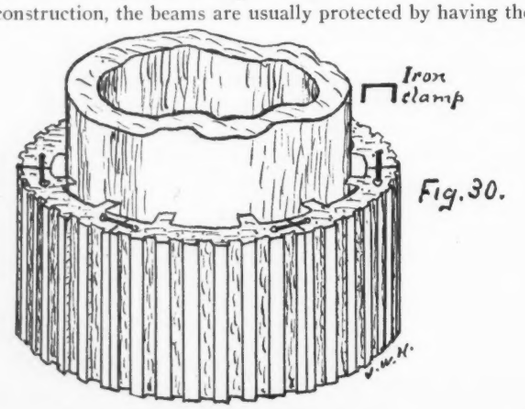


Fig. 30.

The columns of modern buildings support enormous loads, nearly the entire building and its contents. Even the outside walls, which appear to rest upon the ground are, in the case of high buildings, hung or placed upon the steel frame. This is because thin, self-supporting walls of such a height are not possible. If thick enough to sustain its weight it would be so thick at the base as to occupy almost the entire lower area of the building. The rooms, except in the higher stories, would be very small. It is, therefore, evident why steel columns and girders are of such vital importance. The fire-proofing must withstand heat and resist water suddenly thrown against the fire-proofing with its cooling and contracting effect as well as the strong impact of the modern fire streams.

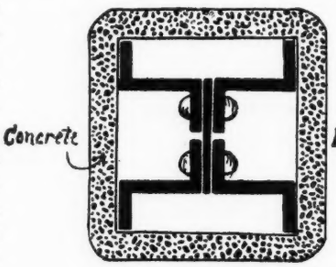


Fig. 31.

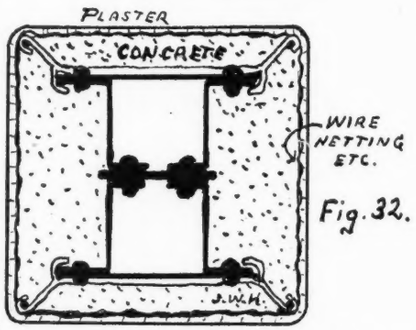


Fig. 32.

ONE SYSTEM NOT ADAPTED TO ALL PARTS.

When a general system of fire-proofing has been selected for a building, it is usually more economical to use it almost throughout. Special conditions, however, arise where it is well to use different systems on different parts of the building, as well as different systems in different buildings. The questions of weight, location, thickness, architectural effect, and rapid work must be kept in mind. Bricks, or solid tile, built around a column do not protect as well as hollow and porous tiles, or the excellent systems with air space, obtained by using expanded metal, wire lathing, etc., as described later.

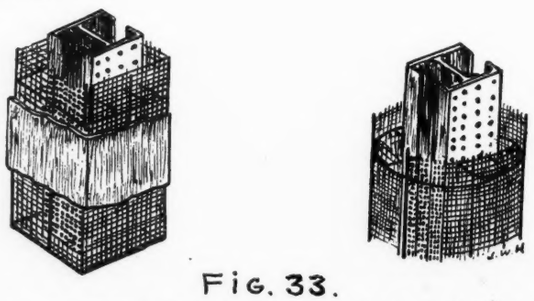


Fig. 33.

Whatever system is used, it is best to shield the fire-proofing of columns, or pillars exposed to blows in a warehouse, or like conditions, by putting a sheathing of wood, or thick sheet-iron, on the outside. Otherwise it would be slowly knocked loose and fall off.

Where columns pass through floors, or girders penetrate walls, careful attention is needed to avoid leaving the joints unprotected by fire-proofing. Several failures are on record where fire penetrated a crack, or joint, and did great damage.

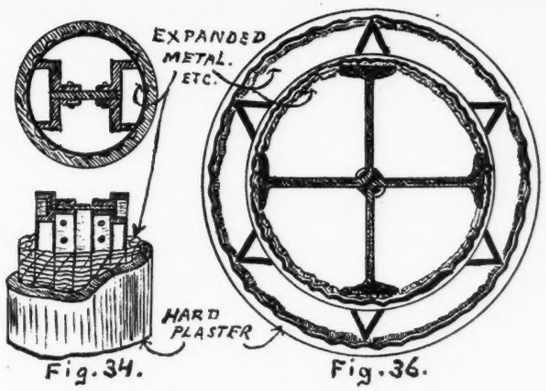


Fig. 34. Fig. 36.

METHODS OF PROTECTING COLUMNS

The general application of hollow bricks and porous tiling to protect columns is shown by the horizontal section indicated in Fig. 26. The location of the pipes and conduits are often at the side of a column in a special air space, as indicated. Because of slight blows, jarring, or settling of a building, it is best to wrap at least the inner covering of brick or tile with copper wire. The same precaution is advisable to secure the hollow tiles of the various shapes in Figs. 27, 28 and 29. Sometimes iron clamps, or staples, are used to hold the tiles together, as in Fig. 30, which is a common method of protecting cast iron and other round columns.

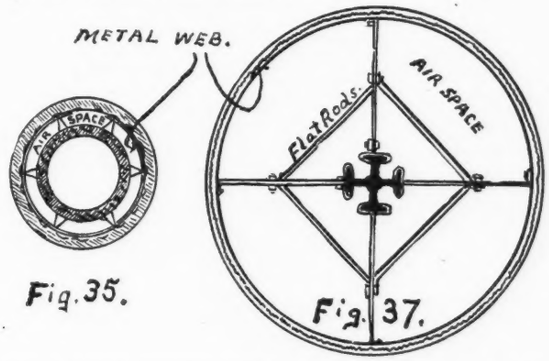


Fig. 35. Fig. 37.

A type of simple concrete covering is shown in Fig. 31, but to fully protect against fire, it must be thick and well made, because it is in close contact with the metal. An improved concrete method is shown in Fig. 32, which is one of the applications of Roebling's wire lath web around a column, first covered with cement, or equivalent concrete. The wire web can be that of any maker. It holds the concrete firmly in place and retains the finishing plaster which goes on the outside of all columns.

AIR SPACING AND FURRING

Considering further the use of wire web and expanded metal, we must appreciate the importance of air spacing, which is secured in several ways. It is also best, for the sake of the lay-reader, to define the word "furring." It means the use of strips, blocks, or other device, so placed as to give an air space between a wall, or other back-

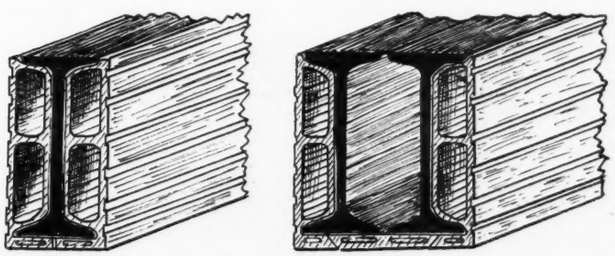


FIG. 38. FOR SINGLE AND DOUBLE GIRDERS.

ing, and a covering of tiles, woven wire, or other surface. Sometimes the furring, or separating device, and the lining are in one piece, as in the case with hollow tiles in Figs. 30 and 50. Another method of furring is that used with woven wire lathing, or metal webbing, as around the columns in Fig. 33. This is done by small iron rods. It

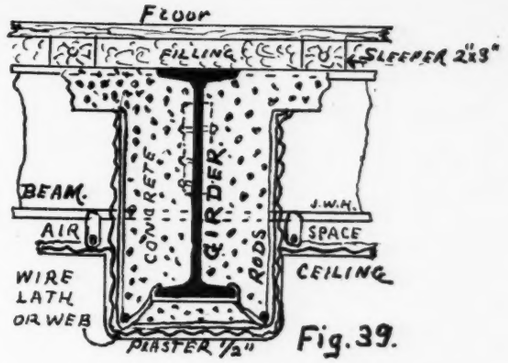


Fig. 39.

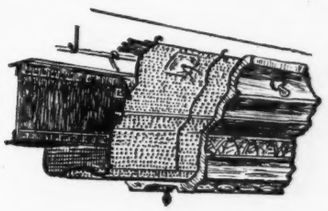


Fig. 40.

Girder Protection - Corniced

is interesting to note that, with this Roebling, or other web systems, the shape of the column does not determine the shape of the finished pillar. This is a great convenience to the architect, who desires handsome interiors at minimum cost. A very hard and durable plaster is needed on all woven wire fire-proof systems. Pipes, conduits, tubes, etc., are easily disposed of within the air spacing around the columns and elsewhere, where wire cloth is used.

ADAPTATION OF EXPANDED METAL

Expanded metal is similarly used, as shown by the wavy lines in Figs. 34 to 37. The simplest method is that shown in Fig. 34, which is for a steel column. For a cast-iron, or other round column, as in Fig. 35, air space is obtained by using vertical "V"-shaped strips against the column, the expanded metal being wired to them. One of the best methods known is that shown in Fig. 36, where expanded metal, or its equivalent, is bent around the column. Then a coat of hard plaster is applied. Next, six or more "V"-shaped furring strips are put in position under a second covering of expanded metal and plaster.

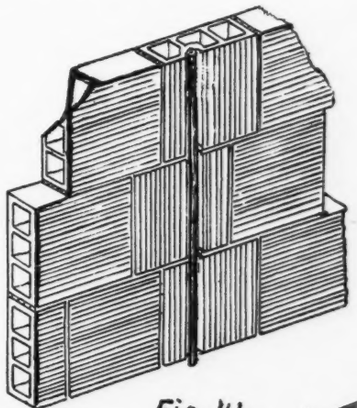


Fig. 41.

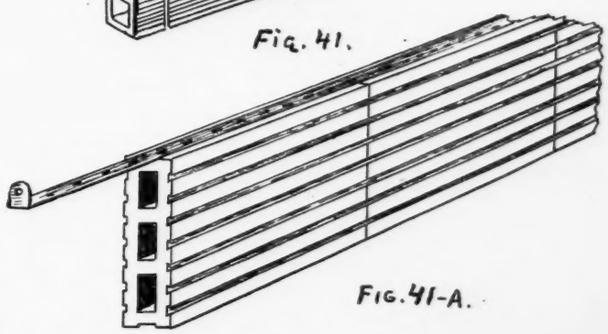


FIG. 41-A.

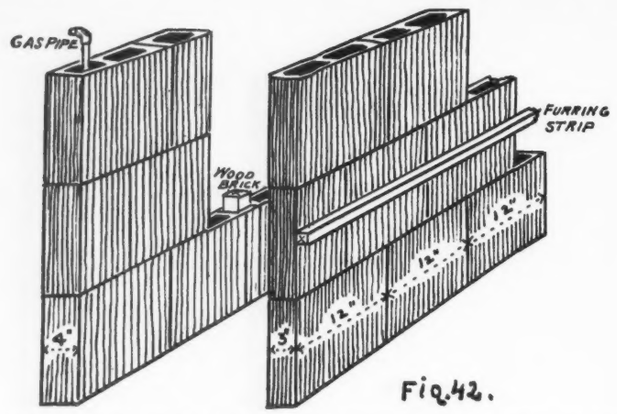


Fig. 42.

Large pillars for architectural effect can be made from small columns by the use of expanded metal and like fabrics, as indicated in Fig. 37.

The protection of girders is similar to that of exposed beams. It is done with hollow tiles in various ways, one of which is indicated by Fig. 38. If concrete is used as in Fig. 39 wire web laths or other mesh is placed around the concrete and embedded in it. See also Fig. 21, August issue. Girders are protected against fire and finished with handsome shapes as in Fig. 40. The furring for air space is done by iron clamps and hangers.

PARTITIONS

Ordinary partitions of most houses in this country are of wood studding with wood laths and plaster on both sides. A more dangerous device to cause draft in the walls and spread fire by the small pieces of wood cannot be conceived. If such walls and partitions were filled with a cheap mixture of lime, or cement, and any light

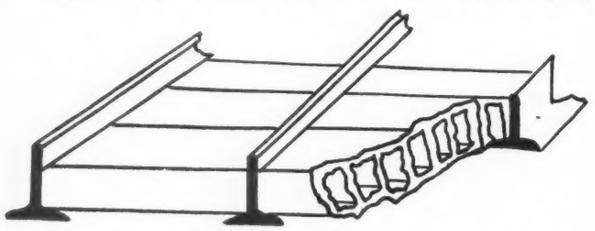


Fig. 45.

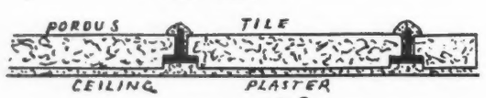


Fig. 46.

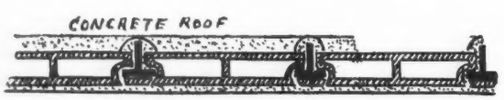


Fig. 47.

substance, or with ordinary concrete or bricks, the dwelling would be safer and at the same time need less fuel to heat it. Most dwellings of Europe have filled walls and partitions. There is a way of making a slow burning construction even without filled walls; by using metal lathing, or expanded metal properly isolated, or furred when put in place with staples driven into the studding, joists, etc. Then plaster as usual.

When completely fire-proof partitions are desired, there are several excellent methods at our disposal. One is the use of ordinary brick laid with mortar. This gives a heavy result and not warranted unless great loads are to be supported independently of the frame of the building. Hollow and porous tiles make excellent partitions and are extensively used. Modern large buildings are often divided, or changed, into rooms to suit the tenant, by thin partitions placed upon the finished floors. Porous tiles which hold nails are adapted to such work. Fig. 41 shows the horizontal system of tile partitions with vertical tiles for pipes. Fig. 42 is the vertical system; Fig. 41a the Maurer, with flat steel strips between each row to make a very rigid and thin partition.

The Lee partition is thin and stiff. It is somewhat on the principle of Fig. 19, as shown in the August issue, except the tiles are thin and large. They are held between twisted tension rods on both sides and embedded in the plaster. Tile partitions are from two to six inches thick, according to location and height of room.

Another class of very thin fire-proof partitions is made by the expanded metal and metal web methods which use small upright channel, or angle bars, or steel studding, firmly secured at the ends, and spaced from twelve to twenty inches apart. On these are fastened, with tied wire, the kind of expanded metal, or wire netting selected. Blocks of wood are inserted where needed to facilitate fastening the base boards, wainscotting, chair board, picture frame molding, door and other frames. Such partitions are often of only one layer of wire netting plastered on both sides, resulting in a partition only two inches thick. When made with netting on both sides they are four or more inches thick, but provide air space and a room for pipes and conduits.

ROOFS AND CEILINGS BELOW THEM

The shape, as well as the materials of roofs, influences the method

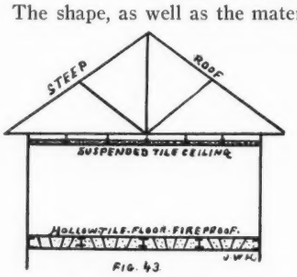


Fig. 43

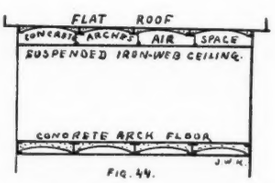


Fig. 44.

of making them partly or wholly fire-proof. The two general roof shapes are outlined in Figs. 43 and 44. All others are modifications or combinations of these. A mansard steep or pitch roof, constructed of wooden trusses and purlins can be made only semi-fire-proof. This is done by the use of one or all of the following: plaster boards referred to in Figs. 12 and 13, as shown in the August issue, wire lath, and expanded metal properly furred and carefully plastered. The outside is fairly well protected by roofing tile, slate, copper and tin, in the order named.

If the trusses of a steep roof are of steel the general method of fire-proofing is to use porous tiles, wire lathing, etc., about the exposed interior parts with the usual hard plaster. The roof covering is fastened to porous tile, plaster boards, or equivalent, previously attached to the purlins and rafters of the roof. The flat roofs which are mostly used for large buildings are fire-proofed similarly to floors as described under the various systems, except that the girders and beams are lighter. The beams are usually inverted "T" steel, as in Figs. 45, 46, 47. The outer surface of the roof is usually covered with

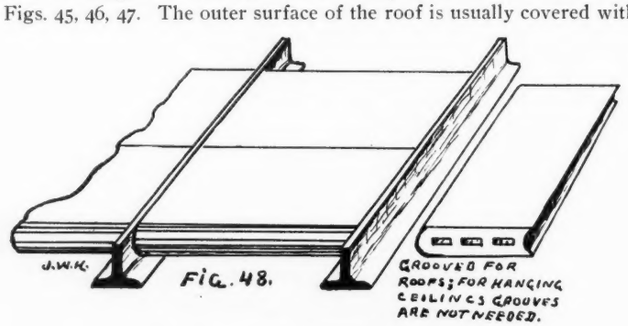


Fig. 48.

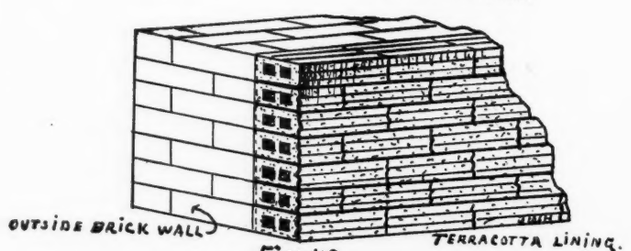


Fig. 49.

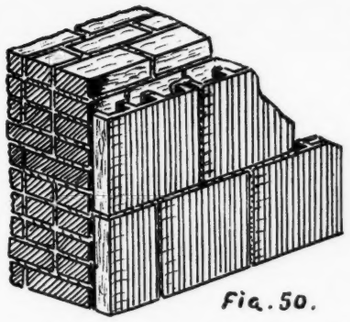


Fig. 50.

a thin concrete before applying the outside covering of tiles, asphalt, copper, tin, etc. All metal must be protected from below as with floors.

The ceilings below the roofs can be finished directly under a flat roof, but they are usually hung from the roof, leaving an air space above, as shown in Figs. 43, 44. Such ceilings are either of wire lathing, or expanded metal, as shown in the August issue in Figs. 20 and 25, or of light suspended and inverted "T" irons, as in Fig. 48.

FURRING AND LINING WALLS

To facilitate plastering the interior of the outer walls of a building and to prevent moisture from coming through, as well as to protect such walls from fire, it is necessary to fur and line the walls. This is done in two general ways, or a combination of the two. The common way is to use one thickness of the hollow brick, or porous tile, as shown in Figs. 49 and 50; the other, is by the application of metal lath, or other web, properly furred or isolated by "V" strips, or other devices. The plaster is thus held firmly in place and the air space renders the walls fire-proof.

The use of furred metal web lathing instead of wooden laths, in ordinary wood frame buildings, when covered with one of the modern indurated plasters, makes a very slow burning and almost fire-proof structure. A fire in such a house can usually be extinguished before much damage is done.

FIRE-PROOF WOOD

In practice, the amount of wood used in finishing the doors, windows, floors, etc., of a modern fire-proof building is so little as to be a negligible quantity. Certain cases, however, arise where even this should be fire-proof. Almost all kinds of wood are now treated so as not to sustain fire. They will char when in contact with flame, but not burn. There are several processes. The essential feature of all is to extract from the wood all moisture, sap and resinous substances and replace them by non-flammable salts. These salts are in solution and forced by great pressure into the previously treated and dried wood. The result gives lumber which can be cut, planed and handled as any wood for construction.

(To be continued.)

CEMENT TESTS OF U. S. ARMY ENGINEERS

Valuable and Practical Results of Long Investigation —Standards Established—Specifications Outlined and Recommended by Special Board

THE Chief of Engineers, United States Army, appointed a special board on December 17, 1900, to investigate and report on hydraulic cements.*

The enormous increase in the use of cement in the United States and the successful manufacture here of the best Portland and other cements, makes the tests of specifications recommended of great value. An outline of the report will suffice to help the reader. Large users of cement should get the full report. The principal conclusions are briefly the following:

GENERAL REMARKS

The knowledge must be obtained in advance to know that a cement will be successful in the finished work. This must be done by tests under temporary conditions, as there is not time to wait for many months for exact conditions as in finished masonry. Tests must be: First, to determine that a cement will develop the required strength; second, maintain that strength. The relation between chemical and physical tests is not close. Cement tests: First, should show defects on merits; second, should be made with least apparatus possible and give indications in a short time; third, should be influenced as little as possible by the person making them and by local conditions.

TEST OF GRINDING

Other things being equal, the finer the cement the stronger it is. Use a standard No. 100 screen, frequently examined to see that it is in order, and test natural and portland cements to see if at least eighty per cent. pass through it. See specifications below for different cements.

TEST FOR WEIGHT BY SPECIFIC GRAVITY

The greater the weight the higher the burning short of vitrification and the better the cement. Adulterations are usually light, and this test indicates their probable presence. Underburned Portland may fall below specific gravity 3; overburned may reach 3.5; natural cement has 2.5 to 2.8; Puzzolan slag cement, 2.7 to 2.8; Portland adulterated with slag falls below 3.1.

TEST OF ACTIVITY

This determines how quickly the cement sets, which should not be less than the time necessary to use the cement on work in progress. It is referred to as the time for initial set and final set. A slow initial set indicates a better final result. In damp weather the samples should be dried before this test. The same amount of water for gaging or mixing cements in the same class should be used. The personal equation, or difference in persons making tests, is to be avoided as much as possible. The room must have constant temperature of samples, when mixed, kept under a damp cloth till set.

TEST FOR CONSTANCY OF VOLUME

This is to determine shrinkage or expansion and is by means of cakes or pats with records of their sizes before and after setting.

TESTS OF STRENGTH

The compressive strength test is not easy to make and gives results no surer than tensile tests. The ratio between the two is uniform. The tensile tests show the strength at the time of the test and if made at different periods of age are the best of tests. The one-day test is only indicative. The seven-day and twenty-eight-day tests are recommended. The local conditions of weather, room, mixing and operator influence this test. Great care and aptitude are needed. The best tests are usually correct. No averaging should be permitted.

A cement testing low at seven days, with great increase at twenty-eight days, is better than one high at seven days and little increase at twenty-eight days' test.

ACCELERATED TESTS, BOILING

The rules governing cement tests published in 1885 by the American Society of Civil Engineeers are accepted in America and Europe as determining setting qualities and soundness. But more rapid tests are used in practice. To detect expansives in cements: gage or mix the cement with water, subject it to dry heat or immerse in warm or boiling water for a few hours, even up to twenty-four hours. This test discriminates between two or more cements, but is not needed except on works of great importance. Other tests take precedence to this one.

TESTS RECOMMENDED

For Portland and Puzzolan cements: 1, for fineness; 2, specific gravity; 3, soundness or constancy of volume; 4, time of setting; 5, tensile strength. For natural cements omit specific gravity and soundness tests. Portlands, with excess of lime, give deceptive, quick results and the lime is masked by sulphate of lime and one not fit for use in sea water. Chemical analysis is needed in such cases.

MANIPULATIONS INTERESTING

Fineness: Take a sieve with 100 holes to a linear inch and woven

* The report is No. 28 of Professional Papers of United States Army Engineer Corps, and can be purchased by writing to the Government Printing Office, Washington, D. C. This digest of the report was prepared by J. W. Howard.—[EDITOR.

with No. 40 Stubbs gage wire; put 100 parts, grains, etc., on the sieve, weigh it, sift it; weigh the sieve and the residue on it; calculate the per cent. of fine which has passed through or blown away as dust. Good American Portlands show 92 per cent.; foreign, a little less. On the Pacific coast, where foreign only are used, for the present, 87 per cent. only is required.

Specific gravity: Temperature, 62° F. of room; in practice, from 60° to 80°, which do very little harm. Use any specific gravity bottle graded in decimal divisions. Fill bottle with benzine, turpentine or liquid not acting on cements. Dry 100 grains of sifted cement on metal plate twenty minutes at 212° F. Put the powder into the liquid. Read carefully the volume of the displaced liquid. Divide 100 by the displacement. The result is the approximate specific gravity.

Setting and soundness: Temperature of room, 62° F., with less than 10° variation. For Portland cements use 20 per cent. of water; for Puzzolan 18 per cent.; for natural, 30 per cent.; mix by rubbing. Time from adding water to close of rubbing, five minutes. Make on glass plate two cakes about 3-inch diameter one-half inch thick at middle. Cover with damp cloth away from current of air. At end of time specified for initial test apply 1-12 inch needle with ¼ pound weight to one cake. If indentation is made the cement has passed the time of initial test; if no indentation, then the cement has set and not passed. At end of time for final set apply 1-24 inch needle with 1 pound, and no indentation should appear.

Then expose the two cakes under a wet cloth, to air for twenty-four hours. Place one cake, attached to glass plate, in water for twenty-eight days; hang the other in a rack above the bottom of a vessel filled with water at 70°. Heat the water slowly to boiling; boil for six hours and let it cool. If the boiled cake is twisted or cracked, await the result of the twenty-eight day test on the other cake in water not heated. If it is warped or cracked, reject the cement. If the twenty-eight day cake is good and shows no swelling, the cement may be used for air or fresh water for lean mixtures only.

Tensile strength: Use unsifted cements on smooth, non-absorbent slab; make a crater in middle of cement; add all water at once if possible; mix with trowel by turning and rubbing for five minutes; fill mould in ¼ inch layers; ram with 1 pound round rammer, ¾ inch diameter, and thirty taps on each layer; smooth with trowel; tap the mold lightly to prevent adhesion to base plate; cover with damp cloth for twenty-four hours; remove mold and immerse briquette in fresh water; change water at least twice a week.

For Portlands, use 20 per cent. water; for Puzzolan, 18 per cent.; for natural cements, 30 per cent. Portland retains nearly all the water; the others only about one-third of it.

Testing Briquettes: When the briquettes are broken in the testing machine, if the first one gives the needed strength, there is no need of testing another, but keep the others for the seven day and twenty-eight day tests. If the short tests are below and the long tests are well above the requirements, the cement may be accepted, unless the work in hand requires early strength.

The testing machines must be used so as not to apply the load too suddenly nor too closely. Increase the load at 400 pounds per minute. Briquettes must be tested immediately after being removed from water. The shape of the briquettes is to be as in practice and recommended by the American Society of Civil Engineeers in 1885. The area of the smallest section is one square inch where the break is to occur.

We again refer the reader to the full report for details concerning simple field tests or indications of quality, also suggestions on purchase tests, acceptance tests, sampling, weighing full and empty barrels or packages, records, warnings concerning slag and Puzzolan cements offered as Portlands and proper uses for Puzzolan cement where constant moisture is present and in sea water. Many points are brought out in the following:

SPECIFICATIONS FOR AMERICAN PORTLAND CEMENT

(1) The cement shall be an American Portland, dry and free from lumps. By a Portland cement is meant the product obtained from the heating of calcining up to incipient fusion of intimate mixtures, either natural or artificial, or argillaceous with calcareous substances, the calcined product to contain at least 1.7 times as much of lime, by weight, as of the materials which give the lime its hydraulic properties, and to be finely pulverized after said calcination, and thereafter additions or substitutions for the purpose only of regulating certain properties of technical importance to be allowable to not exceeding 2 per cent. of the calcined product.

(2) The cement shall be put up in strong, sound barrels, well lined with paper, so as to be reasonably protected against moisture, or in stout cloth or canvas sacks. Each package shall be plainly labeled with the name of the brand and of the manufacturer. Any package broken or containing damaged cement may be rejected or accepted as a fractional package, at the option of the United States agent in local charge.

(3) Bidders will state the brand of cement which they propose to furnish. The right is reserved to reject a tender for any brand which has not established itself as a high-grade Portland cement and has not for three years or more given satisfaction in use under climatic or other conditions of exposure of at least equal severity to those of the work proposed.

(4) Tenders will be received only from manufacturers or their authorized agents.

(The following paragraph will be substituted for paragraphs 3 and 4 above when cement is to be furnished and placed by the contractor:

No cement will be allowed to be used except established brands of high-grade Portland cement which have been made by the same mill and in successful use under similar climatic conditions to those of the proposed work for at least three years.)

(5) The average weight per barrel shall not be less than 375 pounds net. Four sacks shall contain one barrel of cement. If the weight, as determined by test weighings, is found to be below 375 pounds per barrel, the cement may be rejected, or at the option of the engineer officer in charge, the contractor may be required to supply, free of cost to the United States, an additional amount of cement equal to the shortage.

(6) Tests may be made of the fineness, specific gravity, soundness, time of setting, and tensile strength of the cement.

(7) Fineness.—Ninety-two per cent. of the cement must pass through a sieve made of No. 40 wire, Stubb's gage, having 10,000 openings per square inch.

(8) Specific Gravity.—The specific gravity of the cement, as determined from a sample which has been carefully dried, shall be between 3.10 and 3.25.

(9) Soundness.—To test the soundness of the cement, at least two pats of neat cement mixed for five minutes with 20 per cent. of water by weight shall be made on glass, each pat about three inches in diameter and one-half inch thick at the center, tapering thence to a thin edge. The pats are to be kept under a wet cloth until finally set, when one is to be placed in fresh water for 28 days. The second pat will be placed in water which will be raised to the boiling point for six hours, then allowed to cool. Neither should show distortion or cracks. The boiling test may or may not reject at the option of the engineer officer in charge.

(10) Time of Setting.—The cement shall not acquire its initial set in less than forty-five minutes, and must have acquired its final set in ten hours.

(The following paragraph will be substituted for the above in case a quick setting cement is desired:

The cement shall not acquire its initial set in less than twenty nor more than thirty minutes, and must have acquired its final set in not less than forty-five minutes, nor in more than two and a half hours.)

The pats made to test the soundness may be used in determining the time of setting. The cement is considered to have acquired its initial set when the pat will bear, without being appreciably indented, a wire 1-12 inch in diameter loaded to weigh one-quarter pound. The final set has been acquired when the pat will bear, without being appreciably indented, a wire 1-24 inch in diameter loaded to weigh one pound.

(11) Tensile Strength.—Briquettes made of neat cement, after being kept in air for twenty-four hours under a wet cloth and the balance of the time in water, shall develop tensile strength per square inch as follows: After seven days, 450 pounds; after 28 days, 540 pounds.

Briquettes made of one part cement and three parts standard sand, by weight, shall develop tensile strength per square inch as follows: After seven days, 140 pounds; after 28 days, 220 pounds.

(In case quick-setting cement is desired, the following tensile strengths shall be substituted for the above: Neat briquettes: After seven days, 400 pounds; after 28 days, 480 pounds. Briquettes of one part cement to three parts standard sand: After seven days, 120 pounds; after 28 days, 180 pounds.)

(12) The highest result from each set of briquettes made at any one time is to be considered the governing test. Any cement not showing an increase of strength in the 28-day tests over the seven-day tests will be rejected.

(13) When making briquettes neat cement will be mixed with 20 per cent. of water by weight, and sand and cement with 12½ per cent. of water by weight. After being thoroughly mixed and worked for five minutes, the cement or mortar will be placed in the briquette mold in four equal layers, and each layer rammed and compressed by 30 blows of a soft brass or copper rammer three-quarters of an inch in diameter (or 7-10 inch square, with rounded corners), weighing one pound. It is to be allowed to drop on the mixture from a height of about one-half inch. When the ramming has been completed, the surplus cement shall be struck off and the final layer smoothed with a trowel held almost horizontal and drawn back with sufficient pressure to make its edge follow the surface of the mold.

(14) The above are to be considered the minimum requirements. Unless a cement has been recently used on work under this office, bidders will deliver a sample barrel for test before the opening of bids. If this sample shows higher tests than those given above, the average of tests made on subsequent shipments must come up to those found with the sample.

(15) A cement may be rejected in case it fails to meet any of the above requirements. An agent of the contractor may be present at the making of the tests, or, in case of the failure of any of them, they may be repeated in his presence. If the contractor so desires, the engineer officer in charge may, if he deem it to the interest of the United States, have any or all of the tests made or repeated at some recognized standard testing laboratory in the manner herein specified. All expenses of such tests to be paid by the contractor. All such tests shall be made on samples furnished by the engineer officer from cement actually delivered to him.

SPECIFICATIONS FOR NATURAL CEMENT

(1) The cement shall be freshly packed natural or Rosendale, dry, and free from lumps. By natural cement is meant one made by calcining natural rock at a heat below incipient fusion, and grinding the product to powder.

(2) The cement shall be put up in strong, sound barrels, well lined with paper so as to be reasonably protected against moisture, or in stout cloth or canvas sacks. Each package shall be plainly labeled with the name of the brand and of the manufacturer. Any package broken or containing damaged cement may be rejected, or accepted as a fractional package, at the option of the United States agent in local charge.

(3) Bidders will state the brand of cement which they propose to furnish. The right is reserved to reject a tender for any brand which has not given satisfaction in use under climatic or other conditions of exposure of at least equal severity to those of the work proposed.

(4) Tenders will be received only from manufacturers or their authorized agents.

(The following paragraph will be substituted for paragraphs 3 and 4 above when cement is to be furnished and placed by the contractor:

No cement will be allowed to be used except established brands of high-grade natural cement which have been in successful use under similar climatic conditions to those of the proposed work.)

(5) The average net weight per barrel shall not be less than 300 pounds. (West of the Allegheny mountains this may be 265 pounds.) . . . sacks of cement shall have the same weight as one barrel. If the average net weight, as determined by test weighings, is found to be below 300 pounds (265 pounds) per barrel, the cement may be rejected, or, at the option of the engineer officer in charge, the contractor may be required to supply free of cost to the United States an additional amount of cement equal to the shortage.

(6) Tests may be made of the fineness, time of setting, and tensile strength of the cement.

(7) Fineness.—At least 80 per cent. of the cement must pass through a sieve made of No. 40 wire, Stubb's gage, having 10,000 openings per square inch.

(8) Time of Setting.—The cement shall not acquire its initial set in less than twenty minutes and must have acquired its final set in four hours.

(9) The time of setting is to be determined from a pat of neat cement mixed for five minutes with 30 per cent. of water by weight and kept under a wet cloth until finally set. The cement is considered to have acquired its initial set when the pat will bear, without being appreciably indented, a wire 1-12 inch in diameter loaded to weigh one-quarter pound. The final set has been acquired when the pat will bear, without being appreciably indented, a wire 1-24 inch in diameter loaded to weigh one pound.

(10) Tensile Strength.—Briquettes made of neat cement shall develop the following tensile strengths per square inch, after having been kept in air for twenty-four hours under a wet cloth and the balance of the time in water: At the end of seven days, 90 pounds; at the end of 28 days, 200 pounds. Briquettes made of one part cement and one part standard sand by weight shall develop the following tensile strengths per square inch: After seven days, 60 pounds; after 28 days, 150 pounds.

(11) The highest result from each set of briquettes made at any one time is to be considered the governing test. Any cement not showing an increase of strength in the 28-day tests over the seven-day tests will be rejected.

(12) The neat cement for briquettes shall be mixed with 30 per per cent. of water by weight, and sand and cement with 12½ per cent. of water by weight. After being thoroughly mixed and worked for five minutes, the cement or mortar will be placed in the briquette mold in four equal layers, each of which is to be rammed and compressed by thirty blows of a soft brass or copper rammer three-quarters of an inch in diameter (or 7-10 inch square with rounded corners), weighing one pound. It is to be allowed to drop on the mixture from a height of about one-half inch. Upon the completion of the ramming the surplus cement shall be struck off and the last layer smoothed with a trowel held nearly horizontal and drawn back with sufficient pressure to make its edge follow the surface of the mold.

(13) The above are to be considered the minimum requirements. Unless a cement has been recently used on work under this office, bidders will deliver a sample barrel for test before the opening of the bids. Any cement showing by sample, higher tests than those given must maintain the average so shown in subsequent deliveries.

(14) A cement may be rejected which fails to meet any of the above requirements. An agent of the contractor may be present at the making of the tests, or, in case of the failure of any of them, they may be repeated in his presence. If the contractor so desires, the engineer officer may, if he deems it to the interest of the United States, have any or all of the tests made or repeated at some recognized standard testing laboratory in the manner above specified. All expenses of such tests shall be paid by the contractor, and all such tests shall be made on samples furnished by the engineer officer from cement actually delivered to him.

SPECIFICATIONS FOR PUZZOLAN CEMENT

(1) The cement shall be a Puzzolan of uniform quality, finely and freshly ground, dry, and free from lumps, made by grinding together without subsequent calcination granulated blast-furnace slag with slaked lime.

(2) The cement shall be put up in strong sound barrels well lined with paper, so as to be reasonably protected against moisture, or in stout cloth or canvas sacks. Each package shall be plainly labeled with the name of the brand and of the manufacturer. Any package broken or containing damaged cement may be rejected, or accepted as a fractional package, at the option of the United States agent in local charge.

(3) Bidders will state the brand of cement which they propose to furnish. The right is reserved to reject a tender for any brand

which has not given satisfaction in use under climatic or other conditions of exposure of at least equal severity to those of the work proposed, and for any brand from cement works that do not make and test the slag used in the cement.

(4) Tenders will be received only from manufacturers or their authorized agents.

(The following paragraph will be substituted for paragraphs 3 and 4 above when cement is to be furnished and placed by the contractor:

No cement will be allowed to be used except established brands of high-grade Puzzolan cement which have been in successful use under similar climatic conditions to those of the proposed work and which come from cement works that make the slag used in the cement.)

(5) The average weight per barrel shall not be less than 330 pounds net. Four sacks shall contain one barrel of cement. If the weight as determined by test weighings is found to be below 330 pounds per barrel, the cement may be rejected, or, at the option of the engineer officer in charge, the contractor may be required to supply, free of cost to the United States, an additional amount of cement equal to the shortage.

(6) Tests may be made of the fineness, specific gravity, soundness, time of setting, and tensile strength of the cement.

(7) Fineness.—Ninety-seven per cent. of the cement must pass through a sieve made of No. 40 wire, Stubb's gage, having 10,000 openings per square inch.

(8) Specific Gravity.—The specific gravity of the cement, as determined from a sample which has been carefully dried, shall be between 2.7 and 2.8.

(9) Soundness.—To test the soundness of cement, pats of neat cement mixed for five minutes with 18 per cent. of water by weight shall be made on glass, each pat about three inches in diameter and one-half inch thick at the center, tapering thence to a thin edge. The pats are to be kept under wet cloths until finally set, when they are to be placed in fresh water. They should not show distortion or cracks at the end of twenty-eight days.

(10) Time of Setting.—The cement shall not acquire its initial set in less than forty-five minutes and shall acquire its final set in ten hours. The pats made to test the soundness may be used in determining the time of setting. The cement is considered to have acquired its initial set when the pat will bear, without being appreciably indented, a wire 1-12 inch in diameter loaded to one-quarter pound weight. The final set has been acquired when the pat will bear, without being appreciably indented, a wire 1-24 inch in diameter loaded to one pound weight.

(11) Tensile Strength.—Briquettes made of neat cement, after being kept in air under a wet cloth for twenty-four hours and the balance of the time in water, shall develop tensile strength per square inch as follows: After seven days, 350 pounds; after 28 days, 500 pounds. Briquettes made of one part cement and three parts standard sand by weight shall develop tensile strength per square inch as follows: After seven days, 140 pounds; after 28 days, 220 pounds.

(12) The highest result from each set of briquettes made at any one time is to be considered the governing test. Any cement not showing an increase of strength in the 28-day tests over the seven-day tests will be rejected.

(13) When making briquettes neat cement will be mixed with 18 per cent. of water by weight, and sand and cement with 12½ per cent. of water by weight. After being thoroughly mixed and worked for five minutes the cement or mortar will be placed in the briquette mold in four equal layers and each layer rammed and compressed by thirty blows of a soft brass or copper rammer, three-quarters of an inch in diameter (or 7-10 inch square, with rounded corners), weighing one pound. It is to be allowed to drop on the mixture from a height of about one-half inch. When the ramming has been completed the surplus cement shall be struck off and the final layer smoothed with a trowel held almost horizontal and drawn back with sufficient pressure to make its edge follow the surface of the mold.

(14) The above are to be considered the minimum requirements. Unless a cement has been recently used on work under this office, bidders will deliver a sample barrel for test before the opening of bids. If this sample shows higher tests than those given above, the average of tests made on subsequent shipments must come up to those found with the sample.

(15) A cement may be rejected in case it fails to meet any of the above requirements. An agent of the contractor may be present at the making of the tests, or, in case of the failure of any of them, they may be repeated in his presence. If the contractor so desires the engineer officer in charge may, if he deems it to the interest of the United States, have any or all of the tests made or repeated at some recognized testing laboratory in the manner herein specified, all expenses of such tests to be paid by the contractor. All such tests shall be made on samples furnished by the engineer officer from cement actually delivered to him.

MAYORS TALK ABOUT MUNICIPAL OWNERSHIP

L. O. ROBINSON, MAYOR, CEDAR FALLS, IOWA

"I am in favor of municipal ownership of public water works, electric and steam heat plants; also street railroads. My reason is that they can be operated from one power house with less expense and give better satisfaction to the public in general."

GEORGE W. CUNNINGHAM, MAYOR, FOSTORIA, OHIO

"I most heartily endorse and am in favor of the municipal ownership of public water supply and electric and gas lighting.

"Statistics have proven by the most observing and careful investigation that it is advantageous not only in a monetary sense, but because of a better and more satisfactory service."

R. L. GORE, MAYOR, WAUKESHA, WIS

"I am opposed to municipal ownership of public water supply, electric or gas light, and street railways, etc.

"Such ownership, by small cities, in my opinion, would work a great burden upon the tax payers and cause constant worry to the city officials. In cities of 100,000 and over, owner hip might be a saving; in smaller cities, I think not. I could advance many objections, yet think this sufficient for cities of the third or fourth grades."

HENRY WELTSTEIN, MAYOR, TRENTON, MO

"I am in favor of municipal ownership. Most of our plants are bonded for double the value that they can be built for and in order to make this large interest, running expenses and profits, the cities are compelled to pay a larger amount for service than if they owned the plant themselves."

J. B. KURTZ, MAYOR, CONNELLSVILLE, PA

"You can quote me as favoring the municipal ownership and operation of light and water supply. I think it would be a great saving of money to the taxpayer in a very few years. We pay out thousands of dollars every year to corporations for water and light when, if the city owned and operated the plants, in a few years we could pay for them with the profits arising over and above interest and expenses. They would be self-sustaining with a good sum for other improvements for the city and we should be able to get light and water at a very reasonable price."

JAMES D. PHELAN, MAYOR, SAN FRANCISCO, CAL

"I favor municipal ownership for the following reasons: Their use would be universal; ownership in private hands is equivalent to the power to tax; when privately owned they lead to the corruption of the government by interference in politics; profits should not be made (always excessive in private hands) out of the necessities of the people when the government has properly the right to assume ownership. The success of public ownership is established in many cities and countries."

TOM BEN GARRETT, MAYOR, FORT SMITH, ARK

"I believe whatever profits might accrue from the ownership and operation by cities of these 'natural monopolies' should be retained by the cities themselves and turned into other channels where everything is an outlay, such as fire departments, street improvement and the like, thereby minimizing the expenses of these non-productive departments."

LOCAL OPTION IN TAXATION

Endorsed by League at Charleston Last Year—Plan Favored by Several States and Many Local Organizations—As Applied to the Empire State—Gives Advantage to Rural Districts

By Lawson Purdy*

THE League of American Municipalities at its last convention in Charleston, S. C., unanimously adopted certain resolutions, outlining the changes which should be made in the constitutions and statutes of our states, in order that progress in taxation may be possible.

It is less than nine months since that convention was held, yet action has already been taken in several states in accordance with the recommendations of the league. The resolutions adopted by the league, which have had such approval, are as follows:

"Resolved, That all provisions in state constitutions should be abolished which restrict the power of the legislature to regulate assessment and taxation.

"Resolved, That so much state revenue, as may be required in excess of that derived from specific taxes, should be apportioned to and paid by the counties or towns in proportion to county or town revenue.

"Resolved, That every county or town and every city be granted the right to regulate the assessment and taxation of property at its discretion, provided any increase or reduction of assessment must be uniform throughout such county, town or city, and not made on the ground of ownership."

SEVERAL STATES FAVOR THE PLAN

The plan of apportioning state taxes recommended by the league found favor in Oregon and became a law in that state with the approval on February 27th of House Bill No. 68. The principle of the Oregon law is in accord with the resolutions of the league.

The most notable action in harmony with these resolutions has been taken by the Senate of Colorado. The resultions were sent to each member of the Colorado Legislature, and I am informed that they had influence in determining the favorable vote on the amendment to the Colorado constitution which provided in the constitution itself for local option in taxation.

The amendment passed the Colorado Senate by a vote of twenty-six to six and the House by a vote of fifty to eleven. If this is any indication of public sentiment in Colorado, there should be little doubt of the ratification of the amendment when it is submitted to the people in the autumn of 1902.

A CHANGE WANTED IN OHIO

The business men of Ohio have become aroused to the necessity of making great changes in the tax system of that state, and the Ohio State Board of Commerce has entered upon a campaign of education to secure the passage, by the next legislature, of an amendment to the constitution. The State Board in its statement of principles declares:

"For an amendment to the constitution to permit local option in taxation and a simplification of our system of taxation by means of which gains of great and permanent value to every business interest can be secured."

The movement in Ohio is not confined to business men, for on July 12th the Ohio State Bar Association adopted a similar resolution and the Miami County Republican platform declares for local option in taxation.

GREAT BRITAIN LIKELY TO LEAD

Public sentiment in Great Britain is more aroused than it is here and action may be taken there ahead of any state in this country. The councils of Glasgow, Liverpool, London and 300 other municipalities have petitioned Parliament for local option in taxation, and a few weeks ago the Urban District Councils' Association of Great Britain, representing 400 towns, likewise petitioned Parliament for this reform.

NEW YORK ORGANIZATIONS FOLLOW THE LEAGUE

Three weeks after the adoption of the league's resolutions the Chamber of Commerce of the State of New York, one of the most influential and conservative organizations in the country, unanimously approved the report of its Committee on State and Municipal Taxation, and the bill presented by the committee "For the Apportionment of State Taxes and for Local Option in Taxation." Following the action of the chamber, the bill was endorsed by the Merchants' Association, the Board of Trade and Transportation, the West End Association, the United Real Estate Association, the Central Federated Union, the Building Trades Council, fifty labor organizations in the city of New York, and a number of commercial and reform associations throughout the state.

NEW YORK'S PROPOSED BILL DESCRIBED

This bill follows precisely the plan outlined by the league, except that an amendment to the Constitution of the State of New York is necessary. The bill provides first that the city of New York, through its Municipal Assembly, or any county of the state by its Board of Supervisors, may exempt from all taxation or reduce the assessment of any class of property, provided such exemption shall have uniform operation throughout the city or county, and shall not be made on the ground of ownership. That is to say, that no exemption shall be made which would be in the nature of a special privilege to favored persons or corporations, and that it must apply to all property of the character designated within any city or county.

In the next section of the bill, provision is made for the gathering of statistics by the State Board of Tax Commissioners, so as to show the gross revenue of every tax district in the state by counties, and the sources of such revenue.

In the third section an amendment is made to that section of the tax law which provides for the equalization of assessed values and the apportionment of the state tax, so that the State Board of Equalization has merely the ministerial duty of determining the proportion of state tax which each county shall pay, by dividing the gross revenue of each county including all the tax districts within it, by the sum of the gross revenue of all the tax districts of the state, for the preceding calendar year.

EVILS ARISING FROM STATE APPORTIONMENTS

You are familiar with the evils which result from the apportionment of state taxes, among the counties of the state, on the basis of the value of property as assessed by local officials, and the great improvement which will be effected by the enactment of the plan of apportionment I have outlined. The principle appeals to one's sense of justice, but you will doubtless be interested to know how it would work in practice in this state. Unfortunately there is no state in the Union in which the statistics of local revenue are at present compiled in such a manner as to satisfy the manager of the most slip-shop business house, and it is not possible to show the effect of this law in all the counties in this or any other state. Two years ago, however, a report was made by a special legislative committee, which gives us sufficiently accurate figures to make the computation for the city of New York and three rural counties.

The committee made a very careful investigation of the amount of money raised for all public purposes by the three counties of Oswego, Chenango and Cattaraugus and by all the taxing districts within these counties. The amount raised for all public purposes in the city of New York, which comprises four counties, is also known, and as the city of New York represents over two-thirds of the taxable property of the state and pays over two-thirds of the taxes, we are able to determine the effect of the change upon the city of New York and the three counties investigated by the committee with substantial accuracy. For the year in which these statistics were compiled, the city of New York paid $8.20 to the state for every $100 it raised; Oswego paid $10.42; Chenango $12.82, and Cattaraugus $10.13. If the apportionment had been made on the basis of revenue it appears, therefore, that the city of New York would have paid slightly more and the other three counties considerably less.

* Secretary of the New York Tax Reform Association, who read this paper before the fifth annual meeting of the League of American Municipalities, held at Jamestown, N. Y., August 21 to 24, 1901.

These three counties are distinctly rural counties, there being only one city in the three, and their combined population is only 170,000. Chenango has the smallest population, and Chenango would save most in state taxes by an apportionment on the basis of revenue. If the same system were applied to the raising of county revenue the saving which would be effected by the smallest rural places becomes still more apparent. There are some towns in the county of Chenango which paid more than one-fifth of their total revenue to the state; whereas, the large village of Norwich paid only a little more then the city of New York, the amount being $8.35 in every hundred.

THIS PLAN FAVORS RURAL DISTRICTS

A little reflection will convince any one that this plan of apportionment must always work to the advantage of thinly settled rural districts, just as it would in the State of New York. From the standpoint of expediency and justice this is as it should be, and from a political standpoint it renders the adoption of this system comparatively easy. The cities would be very great gainers by being allowed to exempt certain classes of property from taxation and could well afford to pay a little more to the state for the privilege. The rural districts are not generally so anxious for changes in the system of local taxation, but would be compensated for the privilege granted the cities by a very considerable saving of state and county taxes.

An incidental advantage of this system will be the necessity for an annual publication of accurate statistics showing the amount of revenue raised in each political division of the state and the sources of such revenue. At the present time we have no such system, and are trying to carry on the business of the state in ignorance of our income and the manner in which we obtain it. No private business could be run in this fashion for a year. Whether we adopt apportionment in proportion to revenue or not, we ought to have such knowledge of our govermental affairs as these statistics will give us.

CONCLUSION

I do not propose at this time to present an argument for local option in taxation. You have already adopted resolutions which could not be made any stronger, and the action of other countries and many of our states shows such a strong tendency in this direction as to make such an argument almost superfluous. Our nation, made up as it is of independent states, is a magnificent example of the blessings of local self-government, and the movement for local option in taxation is merely an extension of the principle which has made this country great.

In a democracy where the enforcement of law is in the hands of elected officials law can only be enforced in accordance with the prevailing sentiment of each community. You are all familiar with the practical nullification of restrictions upon personal liberty which do not commend themselves to the citizens in many cities. It is the rule and not the exception that taxation laws are enforced in the same spirit, and the practice in most of the cities of the United States is so different from what one would expect from a reading of the state statutes, that the author of the statutes could not recognize his own law in practice. This is local option without the sanction of law. It is better than no local option at all, but it is always an evil to have laws on the statute books which are not enforced or enforceable. It breeds contempt of law and leads to unlawful acts subversive of individual rights.

Anyone can see that a tax law which may work fairly well in thinly settled rural communities will be productive of fearful injustice in a great city. The attempt to legislate by one rule for great cities and country villages has everywhere proved a failure. It is time that we learned from bitter experience to allow such latitude to each homogeneous community as may enable it to adapt its tax laws to the conditions of its own life.

SPLENDID WORK OF NEW YORK LEGAL AID SOCIETY

Of the many charitable organizations in New York City, and their number is legion, the Legal Aid Society is one of the foremost in the amount and character of the assistance given to the poor. Not very long ago the sailor and the immigrant upon reaching this port were the prey of the boarding-house sharps of the river front, and the victims of "shanghaing." The poor, both native and foreign, who have been made the subjects of injustice and sharp practice by "shysters" have a ready friend in the society to see that justice is secured to them.

Up to 1900, during the twenty-five years of its existence, 115,000 cases were attended to by the society, and $865,000 recovered. This large sum would have been lost to the poor had not the society taken their part. It is the object of the Legal Aid Society to assist only the poor and helpless whenever they cannot afford to secure the services of an attorney, and the society will not take any case wherein the applicant, after investigation, is found to be able to employ counsel. In this respect the society is very careful, and consequently has enlisted the good-will of the members of the bar.

The society does not do its work entirely for nothing, for, believing that it is best that each one should pay a little for any service rendered and thus remove the stigma of pauper from its clients, a fee of ten cents is charged whenever the client can pay it; if he be too poor, the fee is waived. Those recovering sums of $10 and more are required to pay to the society 10 per cent. of their recovery. The majority of the collections made do not exceed the sum of $10, and so the income of the society from that source is rather small. In 1900 the receipts from fees was only $1,974.68, while the expenses amounted to $14,000. In addition to the recovery of money, advice is sought on family affairs, disputes between neighbors, and, in fact, on any matters in which wrong is to be righted. The results secured, according to the president's last report, are the removal of dissatisfaction from all who, because of poverty, could not otherwise obtain redress, the lessons taught wrong-doers and those who live on the necessities of the poor, the protection of seamen from the "crimps" and mansellers, and many other blessings to the poor too numerous to mention.

Until 1899, the society had but one office in the city, that at 239 Broadway, but since then three branches have been established. The first was the Seaman's Branch, where over 300 sailors are cared for and protected every month. In October, 1899, another branch was located at the house of the University Settlement Society on the East Side in the midst of those who need its services most. The third, called the Woman's Branch, is located in the United Charities Building, where it is in position to assist the other charitable societies in or near this building, and this assistance is always cheerfully given. It may be said here that the attorneys connected with this society have no other clients than those coming to the Legal Aid, and their income is only the little that the society is able to pay.

The membership of the society exceeds 450, one-half being full members paying $20 a year, and the rest associate members paying $10 each. As seen from the above the main source of income by which the society is enabled to carry on its work arises from subscriptions and the amounts secured are not proving adequate to the needs. A circular letter has recently been sent out to the members of the bar asking for their pecuniary support in order that the three branches lately established may be kept open.

There have been several associations modeled after the pattern of the Legal Aid Society of New York. The New Jersey Legal Aid Association is not so free with its services, as it expects its clients to pay all court fees and disbursements, and twenty-five cents is the retaining fee charged. The main office is in Newark, with a branch in Jersey City. A similar society has been incorporated in Boston, and others are under way in Baltimore, Philadelphia and Pittsburg. In Germany the question has been taken up and Berlin, it is expected, will soon have a legal aid society.

WHAT THE STATE OF MICHIGAN IS DOING FOR GOOD ROADS

State Senator Earle the Leader in the Movement—He Tells How the Work Was Started—Describes the Methods Employed in Construction—Great Enthusiasm Developed—Miles of Road Built Since First Convention—Larger Plans for Next Year

By Our Special Correspondent

THE sentiment for better highways throughout the United States is growing with great rapidity. Nearly every state and territory has become infected with enthusiasm favoring the movement and has some plan, of greater or less magnitude, on foot, involving the expenditure of time, money and energy in the improvement of the public highways next year. THE MUNICIPAL JOURNAL realizes the importance of this movement and proposes to keep its readers fully informed about the progress of the work and the methods employed by different states. This information will be secured from the leaders in the movement by means of interviews and contributed articles. A description of some particular field will be given in each issue. Last month State Engineer Bond, in a contributed article, told about the work in the Empire State. To obtain an account of the work in Michigan we sent our special correspondent to State Senator Earle, of Detroit, who is the leader in the cause in that state, being the chairman of the Senate committee on goods roads and President of the League of American Wheelmen. When asked for a full account of the work in his state he said:

FIRST INTERNATIONAL CONGRESS

"The first International Good Roads Congress ever held was promoted by the Michigan division of the League of American Wheelmen. More than 19,000 pieces of mail matter were sent out prior to the meeting of this congress, which was held at Port Huron, in this state, July 2 to 5, inclusive, last year.

"There were delegates from fourteen states and from nearly every province in Canada present at this congress, who took part in its deliberations and carried home its enthusiasm. Those in attendance were, in most instances, men in charge of the road improvements in their several localities. Among the speakers were the Hon. Martin Dodge, Director of the Public Roads Inquiry, Washington, D. C.; General E. G. Harrison (since deceased), expert road builder from Mr. Dodge's department; Hon. W. H. Moore, President of the Interstate Good Roads Association; Hon. Andrew Pattullo, M. P. P., and President of the Ontario Good Roads Association; Hon. A. W. Campbell, Commissioner of Highways of Ontario, and A. W. Palmer, Esq., chairman of the Kalkaska County Highway Commission.

"The influence of this notable congress is still felt throughout the state. It resulted in the construction of three other samples of roads, built in different parts of the state and costing less than $5,000. It was also the cause of subsequent good roads conventions which were held at Saginaw, Traverse City, Mich.; Topeka, Kan., and Springfield, Ill. Another direct result was the passage of bills by the State Legislature, authorizing certain counties and towns to improve their highways and to issue bonds to raise the funds.

AN ADDRESS BY HON. MARTIN DODGE AT GOOD ROADS CAMP

"To make this gathering of still greater practical value the services of the late General E. G. Harrison, of the Department of Public Roads Inquiry, Washington, D. C., were secured. Under his per-

SAMPLE ROAD BUILT

sonal direction a mile of macadam road was constructed after the most approved methods, with the aid of modern machinery. The lectures or talks which were given by General Harrison on the spot were of incalculable value. While this road is called a 'sample' or 'model,' it can hardly be looked upon as such for the reason that its drainage is imperfect. The time and money which were available at the time of its construction would not permit of the most perfect type of good roads.

"The district through which the road was built is an unsewered one, on the outskirts of the corporate limits of Port Huron. A system of sewers for this section is now under consideration, and when it is completed it will permit the thorough drainage of this road. At present it is drained by means of open ditches along the sides of the road which, while it answers the purpose as a makeshift, is imperfect.

PART OF THE ROAD BEFORE IMPROVEMENT

HOW THE ROAD WAS MADE

"To build the road, stakes were set every one hundred feet on either side of the road, uniformly seventeen feet from the center line. These were firmly driven and levels taken as the work of cross-sectioning progressed. From these levels a profile and standard cross-sections of the road were prepared. It was found that the work was nearly all a 'fill.' A few places on the south end needed slight cuts. This work was performed by an ordinary road grader cutting off the knolls and scattering them in the hollows. The grader was drawn a part of the time with a traction engine instead of horses, which proved satisfactory. The fill was made of pure yellow sand from the immediate locality, the whole formation being a sand deposit.

"The rolling of the road was performed in an efficient manner with a traction engine fitted with roller wheels. The engine thus equipped weighs about ten and one-half tons. The rear drivers have twenty-two-inch faces and the front wheels have eighteen-inch tires bolted to them. It was thought by many that this sand could not be compacted, but with a sufficient amount of water added there was no trouble, so that the first course of stone did not sink into the foundation enough to be objectionable. On some portions of the road a thin layer of grass was spread upon the sub-grade. The grade was brought so as to closely conform to the finished cross-section before the stone was applied.

"A shoulder of clay about two feet wide was placed along the margin of the stone and rolled down with the stone so as to give a continuous slope from the

THE ROAD BEFORE IMPROVEMENT

center to the side ditches. This was made necessary on account of the soft and yielding character of the sand on which the road was built. It would have been better if this shoulder could have been supplemented with gravel and thus have made a good covering for the entire width of the road, but funds would not allow this extra expense.

ROAD-MAKING MACHINERY A NECESSITY

"The stones used were crushed field stone, gathered from farms outside the city, many at a distance of from twenty to thirty miles, and shipped in by rail. The cost at the crusher was $5 per cord. The crushing was done by a crusher donated for that purpose by the Indiana Road Machine Co., of Fort Wayne, Ind.

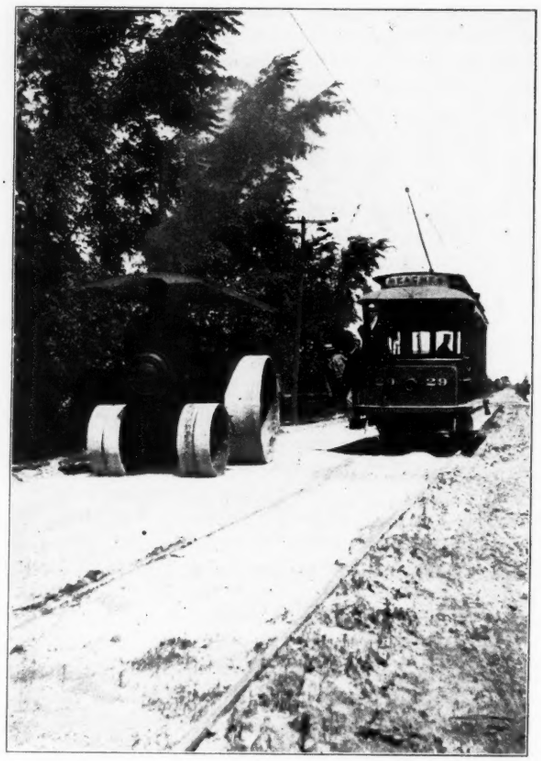
"The crusher was fitted with a rotary screen, placed over portable bins for grading the product. The screen has three sections with holes three-quarters of an inch, one and one-quarter inches and two and one-quarter inches respectively. The product passing through the three-quarter inch screen was saved for binder, but barely provided enough for the top course, so that the sand filler was used in the lower, or foundation course. All stones larger than two and one-half inches that passed over the whole screen were returned to the crusher and recrushed.

"The stone was applied to the road in two layers. The first, or two and one-half inch stone, was placed in the bottom to a depth of about four inches. The roller was then passed over this course a few times dry to bring the stones to a good bearing and partially close the voids. After this the sand filler was applied, and water from the sprinkling wagon as the rolling progressed. The filler was not all applied at once, but continuously and the sprinkling and rolling continued and packed the sand into the voids, till the whole was filled and the foundation became hard.

"The second course, of one and one-quarter inch stone, was then applied three inches deep, and watered and rolled as before, but filled with the small stone chips and dust that passed through the three-quarter inch section of the revolving screen. The rolling for this course was a much longer process and continued until the road was thoroughly hardened.

UNIQUE TRACTION ENGINE USED

"One important feature brought out in the building of this road was the fact that the same traction engine could be used for crushing stone, hauling the stone from the crusher to the road and rolling the road. Every township can afford to have an engine of this kind, and because of the great variety of uses to which it can be put and



THE ROAD ROLLER AT WORK

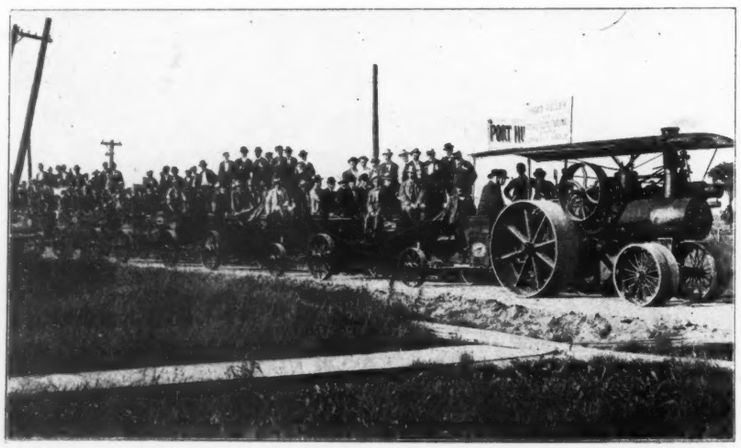
because of the fact that it can be kept almost constantly in use, the cost of macadam roads can thus be lowered about one-third.

"This road has stood the constant traffic of heavy traction engines, hauling wagons, loaded with ten to fifteen tons of stone, for more than a year and shows no evidence of giving way, proving that roads so constructed will bear the hardest kind of usage.

"Our plans for next year already include a much larger amount of work than has yet been accomplished in this state. One township alone, Grosse Pointe, has raised, and now has in the bank, $176,890 to be expended in building macadam roads. The appropriations for the same purpose by other townships and counties will swell this amount to half a million dollars, which will be disbursed during the next two years.

GOOD ROADS TRAIN FOR 1902

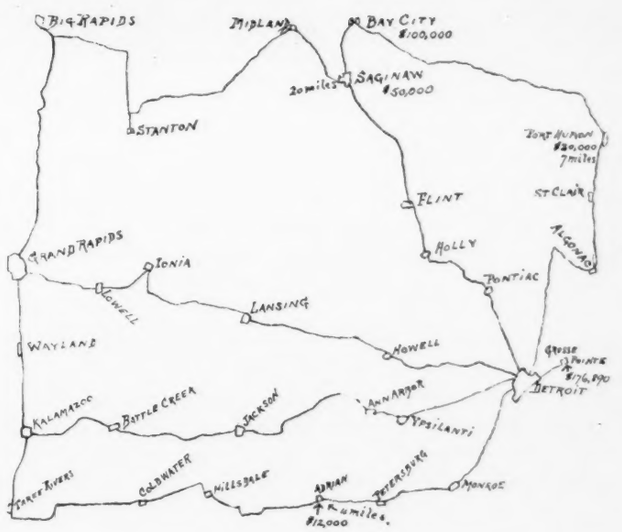
"To further the cause I have arranged for a good roads train to tour a certain portion of the state (see accompanying diagram) during the season of 1902. The train will include a complete outfit necessary for the construction of model roadways, and will be hauled, free of charge, by traction engines furnished by the Port Huron Engine and Thresher Company, of Port Huron. It was at my urgent suggestion that this company consented to build a special



THE GOOD ROADS TRAIN ON THE COMPLETED ROAD

engine that should be capable of furnishing the power to crush and haul the stone and roll the road. This good roads train will be drawn by this engine.

"It is my hope that we shall be able to thoroughly revise our state laws relating to the improvement of highways this winter and to organize a State Road Department which will push this work from now on with greater economy than is possible under the direction of a less united organization. One thing is assured, viz., the speedy improvement of the main thoroughfares which thread the state. This will be brought about by some means because the citizens of this great Commonwealth are thoroughly aroused to the need and determined that the good results shall be achieved in one way or another. In my opinion it will not be long before the highways of Michigan will compare favorably with those of states which have been longer at work and which are blessed with far more favorable conditions for road construction. Here we have many obstacles to overcome, but we are bound to win. The sentiment for better highways is growing so rapidly that the funds at the disposal of the road builders will be insufficient to meet the demand. In this we are having the same experience which has been met with in New York, Massachusetts, Connecticut, New Jersey and other states. But it will not be long, after the public has had a taste of good roads, before the liberality of the taxpayers will keep pace with all reasonable demands."



PROPOSED ROUTE MICHIGAN GOOD ROADS TRAIN, 1902

CANADIAN MUNICIPALITIES

Differ in Administration from Our Cities—Troubled with Ward Heelers—Enthusiasts on Public Ownership of All Public Utilities—Have Little Police Corruption—Strong Believers in the Direct System of Labor—Adopt Some of Our Ideas

By John Arbuthnot*

It is probably known to the majority of those present that Canadian municipalities derive their functions and owe their existence to the legislatures of the various Provinces in which they lie, and as each of the various Provinces of Canada has its own municipal institutions they necessarily differ in many details. It is safe to say generally that, in most of the Provinces, the British municipal system has been used as a foundation, with such changes as are necessary to suit the local conditions. The corporation is composed of the Mayor and Council in cities; in rural municipalities, of a Reeve and Councillors. The Council not only performs the legislative functions, but, with the exception of the city of Toronto and a few other cities, is the executive body as well, and appoints all officers, none being elected by the people as in American municipalities. The Mayor is the presiding officer and has a casting vote and a limited vetoing power, but has no absolute power of appointment or otherwise. In fact, in Council, he has less power than an alderman, for he cannot initiate any movement; but in practice, of course, the Mayor has a great deal of influence on account of his position, and if a prudent man, can really become an important, if not a controlling, factor in the municipal sphere.

The Mayor and Aldermen are rarely paid, and where they do receive any emolument it is usually only sufficient to reimburse them for necessary expenditures, and it is not intended in any sense as a salary for their services. On the whole it is generally conceded that more efficient service is rendered than if salaries sufficient to tempt men of less public spirit to contend for municipal positions were paid. As it is, it is considered an honor to be elected to a municipal board in Canada and the position is accepted by the most prominent business men of the communities, and it is a rare thing to find any scandal in connection with municipal institutions.

POLITICS

With the exception of perhaps a very few towns party politics are never introduced into the administration of public affairs and so strong is the sentiment of the electorate in opposition to the introduction of the party system that any candidate making an appeal to his political friends is almost certain to be defeated. The result of this is that it is difficult to form cliques or parties of any kind in the municipal body and it is extremely difficult for any member of the Council to have a strong pull, his influence depending entirely upon his individual merit.

FRANCHISE

While universal suffrage has not been introduced in municipal elections, yet practically every one interested in the community has an opportunity of voting, as all property holders—male and female of age—and householders are entitled to vote.

MUNICIPAL DEBTS

In most of the Provinces the Municipal Council cannot borrow money upon the credit of the municipality without first submitting a by-law to the electorate. Only property holders are entitled to vote upon the proposed by-law for incurring the debt, the Legislature requiring that a certain proportion of the electors must vote and of those voting three-fifths must vote in favor of the by-law. This has been found an efficient safeguard in preventing the incurring of large indebtedness without mature consideration, and unless the community is practically unanimous in favor of the loan.

LOCAL IMPROVEMENTS

Local improvements, such as street paving, sewers, sidewalks, etc., can be made either upon the initiative of the property owners or of the Council, and in every case no such improvement, unless a sanitary necessity, can be carried out in opposition to the wishes of the majority in value of the property holders to be benefited.

The Canadian system of raising money to pay for local improvements differs from the American in this, that the debentures to provide the money for these works are guaranteed by the municipalities and become part of the municipal debt, the manifest advantage being that the money can be secured at a very much lower rate of

* Mayor of Winnipeg, Canada. The paper was presented at the fifth annual meeting of the League of American Municipalities, held at Jamestown, N. Y., August 21-24, 1901, and read by the Secretary, in the absence of the Mayor.

interest, but upon the other hand it being included in the municipal debt the result is that the municipal debts of Canadian municipalities appear much larger than American.*

PUBLIC UTILITIES

The sentiment in Canada is strongly in favor of the municipalization of all public utilities and the sentiment in this respect is growing every day. Most of the cities own their water works and as fast as possible they are acquiring street railways, electric and gas lighting plants, and telephones. In Winnipeg, we have recently acquired the water works and street lighting plant and have been able to greatly reduce the price to the consumers while adding to the efficiency of the plants and the quality of the water and light supplied. Several of the Manitoba towns have their own electric light plants, telephones, etc.

CONTRACT VS. DAY LABOR

There is a growing sentiment in favor of the direct employment of labor in municipal works. It has been felt that where contractors are employed to construct public works the temptation exists for them to corrupt the officials, thereby rendering the work inefficient and defective. The city of Winnipeg has, for the last few years, performed nearly all of its public work by the direct employment of labor. The city has its own quarry, crushing plant and the railroad connecting with the city, which is operated by the Canadian Pacific Railway; does all its macadam work, owns its asphalt plant and lays its asphalt pavements; puts down its own water mains and sewers. The result has been most satisfactory to the citizens, as there has been a large saving in cost and much better work done.

POLICE CONTROL

In most of the Canadian cities the police are under the control of a Board of Police Commissioners composed of one of the Judges, the Mayor and the Police Magistrate. This has been found to work advantageously, as it removes the police force entirely from the sphere of ward politics, and such a thing as interference by aldermen or civic officials with the police is practically unknown.

PARKS AND BOULEVARDS

The Canadian cities have adopted the American idea with reference to park boards, in whose charge is absolutely placed the administration of the parks, boulevards and cemeteries, and where this has been done there has been no reason to be dissatisfied with the results. Many men are found who will serve on park boards who would not be willing to undertake the worries and inconveniences of a career on the municipal board, including, as it does, a public election contest.

PUBLIC SCHOOLS

Under the Canadian public school system the public schools are administered entirely by public school boards, who are elected by the people in the same manner as the municipal council, the only connection the Council has with the schools being the duty of raising the annual levies required for school purposes.

In summing up, the best results in the administration of municipal affairs in Canada, as elsewhere, are only attained when the business men of the community take a lively interest in public affairs; where their civic pride prompts them to actively engage in the public business of the community, and, in Canada, as elsewhere, where ward heelers and aspiring politicians are allowed to force their way into municipal councils, the immediate result is a lowering of the tone of the corporate body and a lack of respect for its public men. As cities grow it becomes more and more difficult to obtain the best men for public positions, but it is very doubtful if a system of pecuniary rewards in the shape of salaries to aldermen would bring about any reform. In my opinion the next decade will see great advancement in the direction of the assumption by municipalities of their public franchise. The public is fast awakening to the fact that the only monopolist that is safe to be trusted is the public itself.

* Here the author is somewhat in error, as it is almost the universal practice in American cities to assume all indebtedness for improvements. There are a few isolated cases where the individuals assume the responsibility, but they are the exceptions which prove the rule.

THE GREAT CROTON DAM OF NEW YORK WATER SUPPLY

The Largest Dam in the World—New York Dependent on Storage Supply—Not Like Other Large Cities—Nine Years Building and Not Yet Finished—Full Description Given

By W. R. Somers, C. E

In the city of New York the boroughs of Manhattan and Bronx, for their water supply, are depending almost entirely upon the yield of the Croton river water shed. In fact, they have no other source of supply except the Bronx and the Byram rivers, which are together capable of furnishing only fifteen to twenty million gallons per day, while the average daily consumption from the Croton river during the year 1900 was about 256,000,000 gallons per day.

The ordinary daily yield, or flow, of water in the Croton river, during the dry season, is insufficient to supply the city; hence, it was necessary to construct impounding, or storage, reservoirs to collect the water during the wet seasons for the supply of the city during the dry seasons.

THE OLD CROTON RESERVOIR AND AQUEDUCT

The original reservoir, called Croton Lake, was formed by the construction of a dam across the Croton river at a point about five miles above where it empties into the Hudson river. The dam of this reservoir was constructed in 1837 to 1843. It formed a reservoir with an area of about 500 acres and a capacity of 2,000,000,000 gallons of water, with a water shed of 350 square miles. Above the Croton Lake there are five natural lakes which have an aggregate available capacity of 1,780,000,000 gallons. The old Croton Aqueduct from Croton Lake to the city was constructed in the years 1837 to 1842. It was justly regarded, at that time, as one of the most magnificent engineering feats of modern times. It is forty miles in length and has a maximum capacity of 95,000,000 gallons per day.

GROWING CITY DEMANDS LARGER SUPPLY

In 1872 the city had a population of 1,000,000, and the quantity of water required was about 85,000,000 gallons per day. In the summer of 1870 and 1871 the natural flow of the Croton river was as low as 27,000,000 gallons per day. This caused great anxiety and showed the necessity of largely extending the works by the construction of impounding reservoirs on the Croton river water shed and a new aqueduct to the city. Therefore, new reservoirs were constructed from time to time as the necessity demanded because of the growth of population of the city.

IMPOUNDING RESERVOIRS

The following is a list of natural lakes and impounding reservoirs on the Croton river water shed:

LAKE OR RESERVOIR	Capacity. Gallons.
Lake Mahopac	500,000,000
Kirk Lake	500,000,000
Barretts Pond	180,000,000
Lake Gleneida	200,000,000
Lake Gilead	400,000,000
Croton Lake, constructed 1843	2,000,000,000
Boyds Corners Reservoir, constructed 1873	2,727,437,000
Middle Branch Reservoir, constructed 1878	4,004,916,000
Sodom Reservoir, constructed 1892	4,883,000,000
Bog Brook Reservoir, constructed 1893	4,145,000,000
Titicus Reservoir, constructed 1895	7,167,000,000
Carmel Reservoir, constructed 1896	10,070,000,000
Amawalk Reservoir, constructed 1898	7,677,935,000
Total storage capacity	44,455,288,000

The available storage capacity for impounding water on the Croton river water shed will be further increased by the building of the New Croton Dam, which is now in course of construction. This

CAPACITY OF THE NEW DAM

dam is being built across the valley of the Croton river at a point about three and a quarter miles below Croton Lake. It will form a reservoir nineteen and two-third miles long, which will have a water shed of 373 square miles. The flow line of the new reservoir will be twenty-nine feet higher than the Croton Lake, hence it will encompass the Lake and increase the available storage capacity from 2,000,000,000 to 32,000,000,000 gallons, making the total available storage capacity of all the reservoirs of the Croton river water shed about 74,500,000,000 gallons. Following the building of the additional reservoirs came the construction of the New Croton Aqueduct, which has a capacity of carrying 300,000,000 gallons of water per day from the Croton river to the distributing reservoir in Central Park. The Aqueduct was built in the years 1884 to 1893.

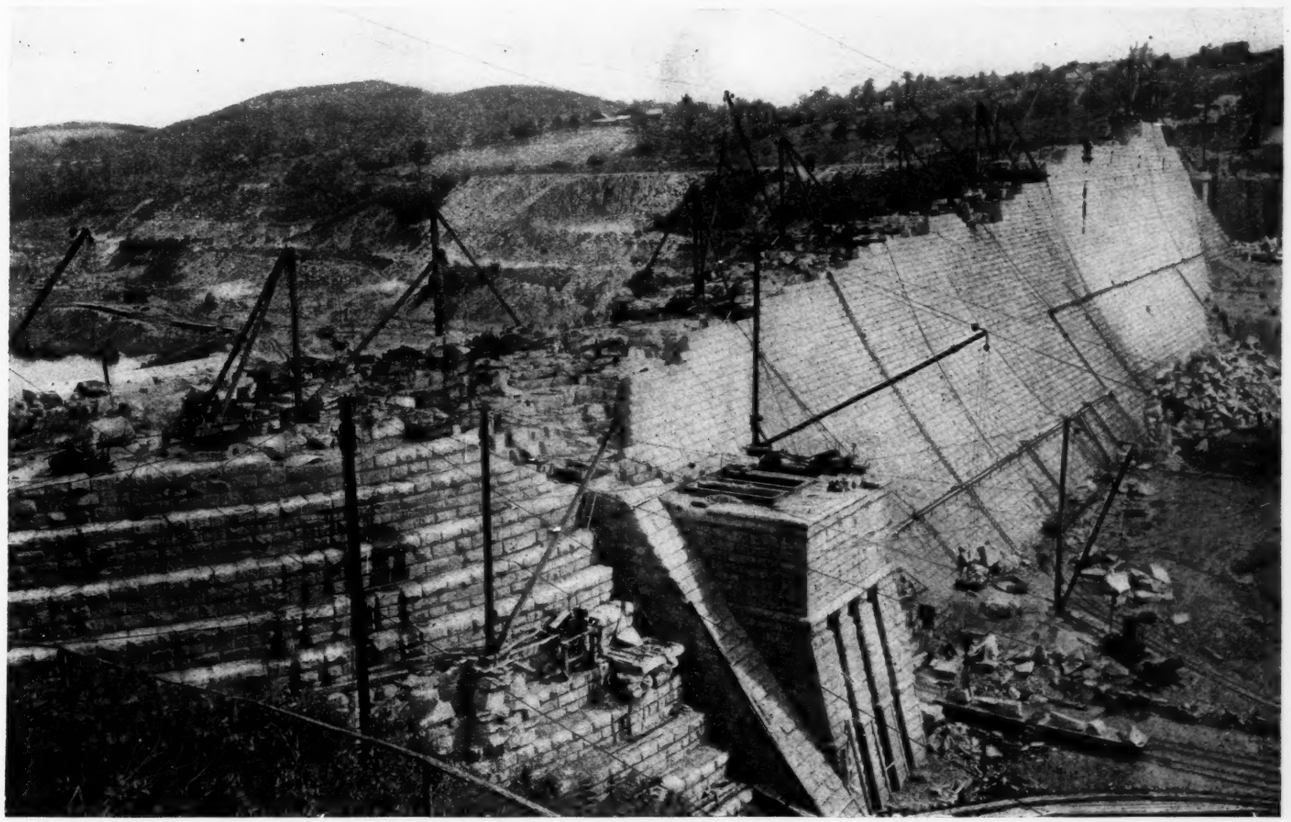
will cost about $5,200,000. The work of its construction commenced on October 1st, 1892.

The main features of the dam consist of an overflow, or spillway wall, the main stone dam across the valley and an earthen embankment with a masonry core wall on the Southern slope of the valley.

The spillway is 1,000 feet long, built of masonry on solid rock. It is parallel to the axis of the valley, curving across the river to its junction with the main dam. The spillway varies in height from twenty feet at its commencement to 170 feet where it joins the main dam. Back of the spillway an overflow channel has been made in the rock leading to the main channel of the river below the dam.

DIMENSIONS OF THE DAM

The main masonry dam commences at its junction with the spillway, and extends straight across the valley a distance of 710 feet to the southerly slope of the valley where it joins the core wall and embankment. The northerly end of the dam will be 170 feet high and 121 feet thick at the base. At its largest section it will be 300



THE DOWNSTREAM FACE OF THE DAM, SHOWING COMMENCEMENT OF SPILLWAY AND HEADGATE*

DEPENDENT UPON STORAGE SUPPLY

From the above it will be noticed that New York is depending entirely upon artificial works to collect, store and distribute its supply of water; it has no other source available. In this respect it is unlike many of our larger cities that have an unlimited supply always available in their natural lakes and rivers. New York City is obliged to construct dams, to create reservoirs to collect the rains as they fall from the heavens, therefore its reservoirs must have a capacity sufficient to insure a supply of water during a period of severe drought, and its water works must be built in a strong and substantial manner, as the health and prosperity of the city depend upon its supply of water as being one of the primary wants of human life, no less essential than food and air.

LARGEST DAM IN THE WORLD

The New Croton Dam will be 300 feet in height from the lowest point of the foundation, which is 134 feet below the bed of the river. It will contain about 675,000 cubic yards of masonry, and it

feet high and 216 feet thick at the base, and at the southerly end it will be 220 feet high and 164 feet thick at the base. The thickness at the top will be eighteen feet. The earthen embankment and core that form the southerly end of the dam will be 590 feet long, making the total length of the structure 2,300 feet. The maximum height of the core wall where it joins the main stone dam is 200 feet; at this point the wall is eighteen feet thick at its base and up to a height of about fifty-three feet; it then tapers to a thickness of six feet at the top. The embankment is to be thirty feet wide on top with sides sloping two to one. The inner slope is to be protected by stone paving eighteen to twenty-four inches in thickness laid on broken stone of a depth of twelve to eighteen inches.

About 600 feet of the spillway wall is now completed. The remaining portion of the same is to be carried about sixty feet higher. The main stone dam is to be built about eighty-five feet higher at the northerly end and about twenty-seven feet higher at the southerly end. About 400 feet of the core wall is unfinished, of a height varying from thirty-five to sixty feet. When completed it will be the largest dam in the world.

* By courtesy of the *Scientific American*, New York.

PUBLIC OWNERSHIP OF PUBLIC UTILITIES

Not Revolutionary and Experimental—Successful Operation in Many Cities—Service Not Poor Under Public Ownership—Corporations Greatest Menace to Our Form of Government—Favoritism Shown Capitalists

By Lee Meriwether*

THE argument against public ownership of public utilities may be summarised under three heads:

1. It is revolutionary and experimental.

2. It is expensive; work of any kind costs government more than the same work costs private enterprise.

3. It means an army of office holders which, in turn, means a powerful and dangerous political machine.

If these three arguments can be successfully met and answered the verdict must be in favor of public ownership for our opponents cannot, at any rate they do not, advance any objection of any moment which may not be fairly placed under one or the other of the above heads.

NOT REVOLUTIONARY AND EXPERIMENTAL

Even were this true it would not follow that public ownership is a bad thing. All revolutions are not bad, neither are all experiments. But, as a matter of fact, the statement is not true as any one may learn who chooses to inform himself as to current history and statistics. Of fifty-one countries, forty-one own their own railroads, and of all the railroad mileage in the world (excluding the United States) 146,813 miles are owned by government, as compared with 87,834 miles owned by private capital. Large as is this showing for public ownership, it will soon be still larger, for everywhere people are awakening to the fact that government must own the railroads if we would avoid having the railroads own the government. France has to-day only 1,700 miles of state railroads as compared with 21,000 miles of private railroads, but under a recent law, in a short time all the private railroads in France will be taken over and operated by the State. Germany has 26,085 miles of public railroads and only 2,817 miles of private roads. These figures show that, no matter what other objection may be urged, state ownership of railroads is neither a revolution nor an experiment. When we consider the question of municipalities the figures are equally conclusive.

SUCCESSFUL OPERATION IN MANY STATES

Glasgow began, a number of years ago, to operate its own street railways, and with such success that its example was speedily followed by other large cities. Berlin, Germany, has a superb system of elevated railways owned and operated by the municipality; so has Vienna, Austria. Three years ago London, England, began to run its own street cars; the first annual report showed that six and one-half millions more passengers were carried during the first year of public ownership; one cent fares were introduced, wages of employees were increased; uniforms were provided, and the hours of labor were shortened. It was predicted that these things would mean bankruptcy, but at the end of the year, in spite of reduced fares, reduced hours of labor, increased wages and free uniforms, the net earnings were actually greater than the year previous under private ownership. Similar success has attended the public operation of street railways in a number of other large cities. It is hardly necessary to say anything about municipal water-works. Public ownership of water-works has long been the rule rather than the exception. The business of manufacturing and distributing light, both gas and electric, is also rapidly becoming the rule with municipalities. These facts, it is submitted, constitute a complete answer to the objection that public ownership is a mere theory.

LACK OF ECONOMY IS CHARGED

2. Public ownership is expensive. To build a house, or a barn, or a railroad, or anything, always costs the State more than the same work would cost if conducted by private enterprise.

This is not always true, but admit its truth for the sake of argument; grant that a municipal street railway would cost twice as much as a private one, the balance would still swing strongly on the side of public ownership. For instance, the St. Louis Transit Company represents an actual outlay of less than ten million dollars. Competent engineers say that its whole plant cost not more than $9,000,000. Now, even though it be admitted that "politics" would double the cost of building a street railroad, the municipal road would still be a popular economy. Why? Because as things now are the Transit Company is capitalised at $90,000,000, and charges are fixed with reference to earning net profits upon that purely imaginary investment. In other words, while public ownership might possibly require the people to pay *twice* the reasonable value of a railroad, private ownership now forces them to pay rates high enough to earn net profits upon TEN times the actual cost of the road. Under city ownership a street railway that costs only $9,000,000 would not be expected to produce 6 per cent. net upon ninety millions; hence, car fares could be reduced to three, or even to two cents, and still leave a reasonable profit upon all capital actually invested. When Glasgow, Scotland, became the owner of its own street railways in 1894, fares were reduced to two cents, and in many instances to one cent; at the same time employees' wages were increased fifty cents a week and their hours of labor reduced from twelve and fourteen to ten hours a day. Were these results obtained at the taxpayer's expense? On the contrary, after paying all expenses, including fixed charges, interest and taxes, and after allowing for annual depreciation of the plant, Glasgow's street railways turn into the city treasury nearly $200,000 per year. There is nothing wonderful in this: "A business owned by the people is always more apt to be run in the interest of the people than is a business owned by a syndicate of private corporations."

SERVICE NOT POOR UNDER PUBLIC OWNERSHIP

Some of our opponents, while admitting the above points, urge that although state and municipal railroads may give cheap service, they also give poor service. I have personal acquaintance with many of the public railroads of Europe and do not believe that they will suffer in any just comparison; for instance, the electric street railroads of Glasgow equal in every respect the best electric lines in America. The cars are comfortable and commodious, the speed rapid, the fares only three cents, and in certain instances, and at certain hours, only one cent. The Berlin elevated railroads not only equal but are far superior to the New York elevated roads, both in point of construction and rolling stock. The Berlin roads rest upon arches of solid masonry, the trains can run at high speed with little or no vibration, and if one chooses to pay first class fares one may travel in as luxurious a compartment as a Pullman car; at the same time, the passenger of moderate means may travel very comfortably in the third class and pay only ten pfennige, or less than half what the workingman must pay on the elevated roads in New York. After all, however, the question is not settled by comparing roads in Europe and in America. Like can be compared only with like. The question is not how London and Glasgow compare with New York and St. Louis, but how London and Glasgow compare with themselves, with public ownership, and without it. Conditions in Europe and in America are so different that comparisons are of little value. American cities are spread out more than European cities, consequently the average haul of a street railway is necessarily longer with us than with our friends across the Atlantic. Advocates of public ownership freely admit that the passenger who rides from one end to the other end of an American street railroad will probably get a longer ride for five cents than he can get for five cents in Glasgow, or Berlin, or Paris. Paris with more than three million population occupies barely half the area that is occupied by St. Louis with only 600,000 population. St. Louis extends some fifteen miles along the banks of the Mississippi; the traveller who starts at any point in Paris and goes fifteen miles in a straight

* Late candidate for Mayor on a Public Ownership platform in St. Louis, Mo., who gave an address upon the above subject, of which this is a synopsis, before the fifth annual meeting of the League of American Municipalities, held at Jamestown, N. Y., August 21 to 24, 1901.

line will find himself at the end of his journey at least ten miles out in the country. Naturally, under these conditions, street car hauls are shorter in European than in American cities. Before our opponents can claim to have "scored" they must show that the change from private to public ownership in Glasgow, Berlin, etc., has resulted in shorter hauls, higher fares, less efficient service, etc., in Glasgow and Berlin, and this they cannot do, for the exact opposite is the fact.

NOT A DANGEROUS POLITICAL MACHINE

We come now to the third, and probably the weightiest of our opponents' three objections to public ownership; viz., 3. It means an army of office holders, which in turn means a powerful and dangerous political machine.

The answer to this is that public service corporations are already in politics; they constitute at this very moment the greatest menace to our republican form of government with which the American people have ever been confronted. There is scarcely a State in the Union where the railroad lobby is not omnipresent and almost omnipotent during every session of a legislature, and during the conventions of political parties. It is difficult to conceive of a political machine more powerful or more dangerous than that which is maintained in all our large cities by street railroad, gas, telephone and other public service corporations. Public franchises are often worth millions of dollars, and when the stake is so large, and when man's cupidity is what it is, what reason is there for doubting that private ownership of public utilities is responsible for a very large per cent. of public corruption? The monopoly of the streets of a large city is more profitable than a gold mine; to get that monopoly, or, once owning it, to keep it, men who pass for honorable gentlemen, men of wealth and high social standing do not scruple to do deeds which, committed by smaller men, would land them in the penitentiary. Ward politicians with a "pull" are allowed by street railway managers to appoint their henchmen as motormen, conductors, etc. Why? Because the railway managers know that their power to earn profits upon watered stock depends upon the favor of politicians. On the other hand, politicians know that the railway managers in their determination to keep old franchises and to get new ones will mass their thousands of employees in favor of a candidate "friendly" to railroads, and against any candidate who opposes the system of permitting private corporations to monopolize public property. And knowing this, the prudent politician trims his sails accordingly. The growth of railroad influence in controlling the nominations of political conventions has resulted in a decline of statesmanship in America. With few exceptions, when a man aspires to nomination for an important office in either the Democratic or the Republican party he first "makes his peace" with the public service corporations; for well does he know that he cannot be nominated, or if by any accident he is nominated, then that he cannot be elected unless he satisfies the public service corporations that he is a "safe" man. And by "safe" is meant a man who will not curtail a railroad or a gas or a telephone company's power to charge the public rates high enough to earn net profits on from five to ten times the capital actually invested by the railroad or gas company.

SUGGESTIONS OF OPPONENTS

When confronted with these facts our opponents seek refuge in suggesting government control, instead of government ownership; the trouble with this plan is that it won't work. Like Frankenstein, the government in incorporating and giving life to railroads has created a power that is already well-nigh greater than its creator, and has forced us to choose between one of two alternatives—government ownership of railroads or railroad ownership of government. The Inter-State Commerce Commissioners in their official reports frankly admit that the railroads refuse to obey the laws enacted for their guidance and control; nor does there appear to be any power to compel them to obey those laws. In spite of the law forbidding freight rebates and discriminations, every shipper knows that a good "pull" means lower rates than your competitor is made to pay. The Standard Oil Company, as everybody knows, is founded upon the favors it was able to command from railroads. The Standard Oil Company paid ten cents for carrying a barrel of oil 100 miles; its competitors were forced to pay 35 cents for the same service. But that is not all; of every 35 cents paid by a competitor 25 cents was handed over by the railroad company to the Standard Oil Company. The Standard Oil Company might sit still and refine no oil at all, and yet receive a revenue of 25 cents on each barrel shipped by other concerns. Naturally, under such conditions, competition was crushed, and to-day the Standard Oil Company fixes the price of oil at whatever figure it chooses.

Suppose, instead of being run by the government with equal postal charges to all, the post-office were run by private capitalists. Suppose for some secret reason—say a present of a big block of stock—those capitalists were to make an agreement with the New York *Herald* to deliver its mail for one-third the postal rates charged the *World*, how long could the *World* stay in business? Were the post-office in private hands, and were it known that favored postal rates would be given to that paper, or to that business concern which brought most "influence" to bear upon the directors and owners of the postoffice, is it not apparent that there would forthwith be much under-handed work—bribery, corruption and the like—to see who could get his letters carried at the cheapest price? In other words, is it not apparent that the transference to private capital of a public function tends inevitably to produce injustice and corruption? It is of but little moment if John Smith, the baker, or butcher, or merchant, or manufacturer, shows favoritism to his friends; the moment Smith charges me an unreasonable price for bread, meat or boots, I am at perfect liberty to take my custom elsewhere. And there will always be other butchers, bakers and manufacturers to go to, those vocations not depending upon any public franchise or monopoly right. But when the people abdicate their rights in favor of a private corporation, when they confer upon that corporation a franchise to build a railroad down a street or across a state, they confer a monopoly; and when one deals with a monopolist one does so, of course, on the monopolists' terms, since no other recourse is open. There can be no real competition in cities between such companies as gas and street railways, neither can there be any genuine competition in the State and nation between railroads. The only way to secure equal rights to all is to have all natural monopolies, all public service concerns owned and operated by, and in the interest of the people.

THE REMEDY FOR PRESENT EVILS

How can this be accomplished? I admit the difficulty of answering this question. So potent in political conventions are the expert lawyers and lobbyists of franchise corporations that it is seldom possible to nominate a man who advocates public ownership and who *really means business.* In places where the election laws are at all fair, where votes are counted as they are cast, I believe that independent action is the best policy in our cities. National politics have no bearing any way upon city affairs; it is illogical, therefore, on general principles, to conduct a municipal election along national party lines; when, added to this fact, is the further fact that political conventions are so almost universally dominated by franchise corporations, the reason for seeking municipal reform through independent action becomes apparent. The mass of plain people can usually be depended upon; it takes time to reach them and to convince them that your aims are at once honest and effective, but that done the battle is won, unless the corporations have taken the precaution to fortify themselves behind a one-sided, partisan election law. In 1897 the issue of public ownership was new in St. Louis, nevertheless as a candidate for Mayor on that platform I succeeded in getting 18,287 electors to forsake old party ties and vote for an independent ticket. Four years later, in April, 1901, when the question was better understood, when the people had had time to inform themselves, I again stood for Mayor on an independent ticket pledged to public ownership principles, and this time, although we had no newspaper support, no political organization and almost no money, the vote in St. Louis was overwhelmingly in favor of our Public Ownership ticket. A similar gain during the next four years will mean that not even fraud and ballot box stuffing will be able to prevent the people from coming at last into their own. When that day comes the greatest gain will will be, not the cheaper and better service to the people, but the purifying of municipal politics.

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C. M. PALMER, PROPRIETOR

WILLIAM S. CRANDALL, Editor
WEBSTER WAGNER, Assistant
J. W. HOWARD, Engineering Editor

JOHN B. BENNETT, Business Manager
E. J. HERMANS, Manager Western Office, 520 Monadnock Block, Chicago, Ill.
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THE LOSS OF THE NATION

THE people of the United States, of every section and of every station, sincerely mourn the loss of President McKinley. His assassination by an anarchist, in a period of unequalled prosperity, precipitates a new problem for this republic to solve: What shall be done with the anarchist? Considering our form of government, it would seem that only an ignorant or unbalanced mind could conceive of and execute so senseless a plot, for, while the removal of a crowned head might change the course of government, the death of the Chief Executive of this nation, whether by assassination or otherwise, could not materially affect the policy, much less its life. The instrument of this dastardly crime will be justly dealt with, and it is to be hoped that the contributory causes, the principal one of which is "yellow journalism," will be suppressed.

In the history of our country the names of two presidents have been indellibly engraved on the hearts of Americans—George Washington and Abraham Lincoln. Now another, the name of William McKinley, is added. He embodied more of those qualities which go to make up the ideal chief magistrate of the United States than any previous incumbent of the office and we believe posterity will award him that honor. He was a man in the best and truest sense of the word. Born and bred in a modest home, he inherited from his sturdy Christian parentage those principles which contributed to make his life illustrious. At the outbreak of the Rebellion his loyalty took him into the field, where faithful service won for him the commission of major. While an ambitious politician, his idea of what a political life should be kept him pure and patriotic. Twice he refused the offer of friends to secure for himself the presidential nomination because he had given his word to support another. As a statesman he was zealous to promote his country's welfare. When the policy of protection received what was thought to be its death blow, it was McKinley who said, "Protection is stronger to-day than it has ever been." Four years later his judgment was vindicated, in the success of his party on the very issue which had caused its defeat.

During his term as President, his acumen and persistent effort to conserve the best interests of the people, regardless of party, compelled even his bitterest opponents to acknowledge the honesty of his motives. It was his endeavor to do what the people wanted and Republican and Democrat alike were sure to be heard to the end whenever they wished to consult him on matters of state. His domestic life, even more than his brilliant public services, endeared him to the American people. Tender and true, he lived the life of a devoted husband and Christian gentleman. He has set an example for the guidance of all and has shown that the greatest honor the American people have to bestow can best be attained by a strict adherence to the highest principles of life.

MAYOR MIMS, of Atlanta, Ga., comes forward with the suggestion that, as criminals are more or less familiar with the manufacture of "gold bricks" it would not be a bad plan to employ their expert knowledge and spare time in making building and paving brick to be used in city work. This idea is not half bad.

THE United States Post Office is one of the most effective agents that has been lately enlisted in the good roads movement. It insists that the roads covered by its rural routes shall be kept in good condition or the service will be discontinued. This is sure to prove effective for no farmer who has once enjoyed the benefits of free delivery will suffer its loss on this account.

MAYOR STUDLEY, of New Haven, is reported to have voted twice on the same question; once as a member of the Board of Finance, which made it a tie, and once as chairman to dissolve the tie. He claimed that the charter gave him the right so to act, but even suppose that his interpretation of the charter be correct, it was in exceedingly bad taste to exercise so unusual a privilege.

GRINNELL (Ia.) City Council has passed an ordinance making it a misdemeanor for one person to treat another at a bar, or even to indulge in a "Dutch treat" where each party pays for his own drink, and now a Des Moines Councilman proposes an ordinance which will make it a misdemeanor for a saloon keeper to visit his saloon on Sunday or to permit another to enter the premises. Westward the course of Puritanism takes its way.

NOT long ago the New York State Board of Health announced that it would make bacteriological examinations for different cities in the state. Soon after, Health Officer Hix, of Binghamton, N. Y., applied to Health Commissioner Lewis, at Albany, for assistance in this line, when Mr. Lewis stated that the department could not perform such a service for a city as large as Binghamton, which, according to the last census, has a population of nearly forty thousand. It was held that Binghamton should establish and maintain its own laboratory. The State Health Commissioner is right; every city of twenty-five thousand population should maintain its own laboratory.

IT is hard to believe that Pennsylvania was once the cradle of liberty, in the face of recent "Ripper legislation" affecting cities of the second class, whereby the important members of the several city governments are turned out by the dominant state political faction in order to strengthen its own lines. Home rule in Pennsylvania cities will be an impossibility so long as ring rule obtains in politics, whether it be in one party or another. The official heads of three departments in Pittsburg have just fallen beneath the political axe as a fitting climax to this travesty on municipal government. The pity of it all is, the abject subserviency of the great mass of citizens of this Commonwealth to the "boss."

THE Ohio newspapers report that the Hon. Tom L. Johnson has been "sat on" and "turned down" in his effort to increase the taxation of steam and street railroads. It is a notorious fact that not only railroads but many other corporations do not bear anything like their just share of the tax burden in American municipalities, with, perhaps a few exceptions, and it is to be regretted that Mr. Johnson has failed in his efforts to remedy the evil in his city. It is our impression, however, that the authorities of Ohio, who have temporarily taken their seat upon the Hon. Tom, will find it very uncomfortable because of the bristling points which are sure to be developed through the Mayor of Cleveland, by his appeal to the higher courts and also to the people in the approaching state campaign.

SOME interesting disclosures are now being made in the three largest cities in the United States—New York, Chicago and Philadelphia—showing that a close relation exists between the police forces and law breakers and criminals. The rank and file may be all right, but they are obliged to do an immense amount of dirty work for their despotic leaders if they retain their jobs. Conditions will not be materially altered until men of integrity and sound judgment consent to serve at the head of police departments. Water seeks its level and when the whip is in the hands of the evil minded even the better element is sure to sink to that level.

MAYOR NORMAN FOX, D. D., of Morristown, N. J., early in his administration, adopted the practice of inviting prominent and public spirited citizens of his town to informal meetings at his office, where various municipal matters might be talked over. In holding this informal discussion upon various municipal topics, the Mayor's idea was to obtain a general exchange of views upon these questions in order that the most advantageous course might be pursued by the administration. This is not altogether novel, for similar ideas have been carried out in other American cities, but it is an excellent practice for other mayors to follow.

As a result of the wholesale slaughter of street railway franchises in Pennsylvania cities an "Anti-L Organization" has sprung up in Pittsburg, which has recently offered twenty thousand dollars reward, to be paid in sums of five thousand dollars in each case, to any person furnishing information that will lead to the prosecution and conviction, under the Act of Assembly, of any person who shall offer, give or promise any money or thing of value to any member of the Council of the city of Pittsburg, for the purpose of influencing votes in favor of elevated, surface or underground street railway ordinances, now pending before Council. A Municipal Voters' League, such as has been in operation in Chicago for a number of years past, would be much more effective in securing honest legislation for Pittsburg or any other city.

THERE seems to be a general idea among non-office holders that the vast majority of city officials are a lot of thieves and robbers. The Mayor of a western city said, in a public address to a lot of city officials not long ago: "You know that most of us are thieves and robbers; that we are in the business for what we can get out of it." With all due respect to His Honor and to the general critics of city officials we still believe and maintain that the rank and file—and by that we mean a good safe majority of the men in city offices—are honest and patriotic citizens. It is true that some are not; but it is equally true that dishonesty within a city government is often created by the dishonest corporation and promoter outside who corrupts the office holder and appeals to his baser nature in order to win his own opportunity to rob the city.

THE crusade against the smoke nuisance has struck St. Paul and it is being vigorously pushed by Dr. Ohage, Health Officer. He has succeeded in putting the offenders on the run and secured their unqualified pledges to remove the cause by the use of preventive measures which are provided by patent stokers, consumers and similar apparatus for abating the nuisance. The smoke-enveloped city of Cleveland has made material progress in ridding itself of the smoke nuisance and there is no reason why St. Paul, or any other municipality, should not meet with as good success. The smoke nuisance is the result of an improper use of the apparatus invented for its prevention and a large amount of careless firing. If every city had an energetic and intelligent smoke inspector, one who not only understood his business but was sufficiently sustained by state enactments as well as local ordinances it could be freed from the nuisance.

As we go to press the eighth annual session of the American Society of Municipal Improvements is convened at Niagara Falls, of which a full report and several of the leading papers will be given in the November number. Too much cannot be said in favor of the important work of this and similar organizations. Many city officials have been slow to realize the value of such opportunities and a larger number of cities have refused to pay the expenses of a delegation, made up of heads of departments, which should adequately represent them, for trivial reasons. While this has been the attitude of many American municipalities in the past it is encouraging to notice even the slow growth of these associations. The multiplication of civic improvement associations, good government, good roads, municipal art leagues in the United States is one of the favorable signs of the times. The betterment of the municipalities of this country is assured now that so many varied forces, including hundreds of energetic bands of women, have undertaken to improve existing bad conditions.

THE proper representation of the arts and crafts at the St. Louis World's Fair—the Louisiana Purchase Exposition in 1903— is still a conundrum for the managers to solve. The tendency in Europe is to elevate the industrial arts, not by making objects of manual art the attendants on the fine art galleries, but by giving them a place to themselves, away from the machine-made article on the one side and the merely luxurious article without direct use on the other. That this is agreeable to the easel painter and sculptor of genre and portrait can hardly be expected; still less that the makers of machine-made articles which claim are in their design should wish to be put in an inferior place. The problem with the managers of the St. Louis Exposition is to prevent the arts and crafts of Europe and America from falling between two stools. Each side clutches the industrial craftsman; each wishes to use some part of the industrial art output to vary and supplement its own exhibit. There is a movement afoot, however, to claim autonomy for these branches of the arts which have really more vitality and are closer to the people than the fine arts. There is a demand for a separate building and special director. The building should exhibit various American products as no art gallery can, the stained glass of the United States, for example, the bronze and iron work of gates, doors and grills; mosaic of vestibules and halls; their hangings and wood-work, furniture and fittings; things which can form part of the building where other art objects having utility can be shown, not merely American, but foreign also. Unless this is done the great Exposition will lack the newest and most national flowering of the arts.

THE MONUMENT TO McKINLEY

THE tragedy at Buffalo has been followed very naturally by the wish to commemorate the virtues, the personality and long public services of William McKinley in some distinctive way. From several quarters came suggestions for an arch of triumph, and at Chicago a collection of funds began, having this kind of monument in view. If the collectors of the fund are prompt and manage it in the intelligent, energetic fashion peculiar to Chicago, there is every prospect that it will be raised. Warned, however, by the history of the fund for the naval arch at New York, they should act with more than common swiftness, for that fickleness in the public which was shown with regard to Admiral Dewey may be felt again with regard to President McKinley.

Whether an arch of triumph is just the right kind of monument to the beloved and sincerely mourned head of our republic is open to discussion. Hitherto such an arch has been raised to great commanders who have conquered in the field. It was part, and the most august and enduring part of the decorations that met the view of a Roman general when the Senate and people of Rome had been persuaded to grant him the honor of a triumphal entry. That original use of the arch, however, does not preclude a wider employment to-day, just as in the course of time any other symbol may become wider in significance. McKinley had his military past, and although his fame was won on the floor of Congress and in the narrower circles where political moves are debated and perfected there seems no need of drawing the line sharply and keeping arches of triumph solely for the men of battles on land and sea. In the great battle of Protection versus Tariff for Revenue Only he was pushed forward as the leader. Since his side won, he may be rightfully given the tri-

umph accorded by the stronger party in the government to those who carry out their behests.

There are only two cities where an arch of triumph erected to McKinley could stand, and one of them is out of the question unless the fund to pay for it is collected in that community. If Chicago raises the money Chicago might be a good place for the arch. But if she does not, there is only Washington. In Washington, however, the streets and avenues are so wide that the old plan of having an arch straddle the street could not be carried out; if an open space were selected it would stand by itself on a square, like the Arcade l'Etoile in Paris, lonely and distant, failing to come into close contact with the crowds. Yet there might be found some place in the neighborhood of the capitol, say at the end of Pennsylvania avenue, with the rising slope, the trees and terraces of the capitol as a background. It is here that Ward's monument to another victim of criminal megalomania, President Garfield, has found a site, so that the two memorials would be near; here, too, the greater number of persons who visit the capitol are sure to pass. Looking down Pennsylvania avenue, an arch of white marble thus seen in silhouette against Capitol Hill would not be out of key with the architecture above, which is nothing if not Roman in its style.

The career of Major McKinley offers many phases for treatment by the sculptor, from his birth and bringing up, his experiences in the Civil War and his early ventures in Ohio politics, to his election as President and gallant death while performing the duties of his high office. The domestic side may offer other suggestions, for he personified the American estimate of woman as the most important and considerable member of the family, to whose well-being all but the most necessary affairs must bow. On this side he was more completely representative of the popular idea than in politics. Sculptors could therefore vary the hackneyed figures of war, commerce, finance and state with those which symbolize the family affections.

Should the fund be Chicago's there are good sites for an arch along the lake front, perhaps in a certain relation with the Art Museum at Van Buren street, perhaps in Jackson Park with relation to the classic art gallery erected by Atwood for the World's Fair. In Chicago marble will soon blacken owing to the soot in the air; it would be well to have the arch made of tiles which could be made of any size and color and form an excellent back for sculpture.

Many people, however, will be sure to prefer the useful to the ornamental and hold that the memory of McKinley should be carried down the century attached to some building, like a chapel, a school, a library or a museum. There is no reason why they should not start a fund for this purpose, taking advantage of the deep impression the murder of the President has made on men's minds. At the same time the triumphal arch might be perfected by those who look for a distinguished memorial different from the equestrian monument and other commoner forms of testimony to the great dead. Whether it stands at Washington or Chicago it will be a concrete proof that republics are not always ungrateful. CHARLES DE KAY.

THE NEW YORK MAYORALTY CAMPAIGN

THE Mayoralty situation in New York City is much more favorable for the reform elements than it was four years ago and it is confidently expected that Seth Low will be elected Mayor of the metropolis of the New World, together with the rest of the ticket which has been nominated with him by the fusion forces.

Four years ago there were four strong parties in the field—Tammany, Citizens' Union, Henry George and the Republican—the Citizens' Union being strengthened by the influence of the reform administration of Mayor Strong, but bitterly opposed by the Republican machine. On the surface, at least, there is an amicable union of all elements which are opposed to a continuation of Tammany rule. The Republican machine has nominated the candidates, without exception, who were selected by the Fusion Committee. The Henry George element, so strong four years ago, has been eliminated and will undoubtedly give its support to Mr. Low. With this combination working in harmony there is little doubt about the result. The defeat of the present administration is the more assured because there are factional wars within the Tammany organization. Notwithstanding this is denied by the leaders, there is good evidence that they exist, and when "a house is divided against itself it cannot stand."

The reasons why there should be a change in the administration of this city are self-evident to all good citizens. The blood-sucking propensities of the Tammany organization contaminates the community and makes good citizens bad by intimidation and otherwise; it has been shown to be in league with crime and vice; many of its most prominent officials have been guilty of gross conduct, making disgusting spectacles of themselves in the discharge of their duties, often meting out unjust punishment to faithful subordinates who have dared to discharge their duties without favor to the Tammany crowd.

Tammany Hall is reputed to be the strongest political organization in the world, but it has shown a most outrageous abuse of power. Aside from the many moral reasons for its overthrow is that most potent reason—the one which should appeal to the sordid side of the taxpayers—found in the extravagant expenditure of money.

For the current fiscal year the total expenditures will amount to about $200,000,000, which is $130,000,000 more than it will cost to run London's administration during the same period! When it is remembered that the population of the latter city is more than a million larger than our own, that it has a larger area to maintain, that it has three times the number of conveniences, pleasures and privileges which are supported out of the public treasury; that the service of its police, fire, street cleaning and other departments is incomparably better than is found in New York at the present time, it is not surprising that some of the people should ask the reason why. It costs $5,000,000 to run New York Fire Department and its annual fire losses are figured by millions, while London pays about $1,500,000 and reckons its fire losses by hundred thousands. The reason for this may be found in the restrictive building regulations prevailing in London, which make large fire losses practically impossible, and, for this reason the New York department is not to be censured for what it cannot help. As fire fighters, however, the members of the New York department are better trained and more efficient than those of London. Taking all this into consideration there is no reason why the New York department should cost more than three times that of London.

For the current year close on to $12,000,000 will be expended by the New York Police Department, which has over 7,000 men and covers an area of a trifle over 300 square miles, with a population of 3,400,000. London's police force numbers about 15,000 men, embraces nearly 700 square miles of territory, having a population of 6,000,000, but its annual expenditure is only $7,500,000. Why should there be such a contrast in these departments? It lies in the fact that the leaders in the Tammany police, as they openly confess, are out for the "dough," while in London the police department is not used for illegitimate purposes.

General C. H. T. Collis, a member of the Strong administration, in an open letter, pertinently calls Mayor Van Wyck's attention to the scandalous difference in the price paid for asphalt pavements under the Tammany and Strong administrations. He says, among other things:

"It is well known to every man in the business that the last five years are the severest in the life of an asphalt pavement, and that where the traffic is great the pavement has to be nearly all relaid during that period. In other words, a well-laid pavement will remain intact for five years, during the next five years it will require a good deal of repair, and during the third period of five years it will be necessary to lay almost an entire new pavement. You are laying this asphalt (in Broadway) under a ten-year guarantee, at a cost of $6.31 per yard from Canal to Fourteenth street, and at a cost of $5.37 from Fourteenth to Forty-second street. (This under a fifteen-year guarantee.) Yet during Mayor Strong's administration we asphalted Fifth avenue over a new foundation of six inches of concrete, and under a fifteen-year maintenance guarantee, from Ninth to Fifty-ninth street, where the traffic reaches 28,000 vehicles per day, at a cost of $4.35; from Fifty-ninth to Eightieth street at $4 per yard, and from Eightieth to Ninetieth street at $3.29 per yard. Our highest price on Fifth avenue, including a six-inch concrete foundation, was $4.35, as against your average of $5.80 on Broadway, where you are laying the asphalt over the old pavement, one-half of it being on a

ten-year guarantee instead of fifteen. The difference in the cost of paving Broadway and Seventh avenue alone during your administration, and what it would have cost to pave them during Mayor Strong's, as shown by the foregoing figures, is $259,387. This in part represents the difference between administering the municipal government on business methods and running it by a political organization for what there is in it."

It has been claimed that Tammany Hall gives New York the kind of government that it desires and this is the logical reason for its continued supremacy. If the fusion forces are defeated at the approaching election, when there is every reason to believe that the better element in both the old parties will be united with the Citizens' Union in the fight, it will pretty clearly demonstrate that Tammany interprets the public mind aright. "If 'tis true, pity 'tis 'tis true."

MUNICIPAL ART AT THE ST. LOUIS EXPOSITION

It is gratifying to note that St. Louis is building the foundation for the Louisiana Purchase Exposition upon broad lines, aiming to give it greater educational value than was included in the plans for either the World's Fair, at Chicago, or the Pan-American, at Buffalo. The latest evidence of this is its careful consideration of a plan, proposed by the Municipal Art Society of New York, which calls for the installation of a municipal art exhibit.

There are certain functions and equipments of the Exposition which will, necessarily, resemble those of a well governed city, and the purpose of the Municipal Art Society's suggestion is to have these various features so incorporated in the general scheme as to become models for American cities to copy. For instance, it will be necessary to have health, fire, police, park, street cleaning, garbage, engineering and other departments, all of which are found in the modern city. These could be so organized and administered as not only to serve their legitimate purpose for the Exposition, but, at the same time, be exhibited in themselves as models of public service, from which municipalities could learn practical and valuable lessons.

A model fire station could be made attractive to the multitude of visitors, as well as to those especially interested, by having daily drills of the life-saving corps, showing the great value of the life-saving net, the scaling ladder, life lines and the like, all of which are brought into requisition by the fire departments of all our large cities, and which can be easily adapted to the smaller ones. The service of the American fire departments, in this particular, as in some others, is superior to any other in the world.

In the model police headquarters the Bertillon system for the identification and detection of criminals could be on exhibition, at the same time becoming an integral part of the Exposition.

The hospital could be constructed on model lines, certain parts of it left open for public inspection and the whole made to teach a much needed lesson in the construction and administration of such an institution.

Much of the pavement about the grounds could be constructed on model lines and almost wholly without expense to the Exposition, as the great paving companies would be glad of an opportunity to place their work where it would be so generally inspected.

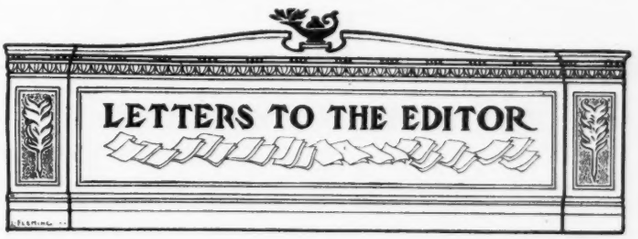
These are only a few of the many ways in which this idea could be made attractive. To those who are at all familiar with the functions of city government the manner in which it would be worked out in detail in each department will readily suggest itself to their minds.

The same plan was suggested to the Pan-American authorities two and a half years ago, by a member of the Municipal Art Society, and failed of adoption because they thought it would cost too much. St. Louis is after great ideas and has abundant means to carry them out. At the time it was submitted to Buffalo it was endorsed by many prominent people who are interested in municipal affairs. Mr. Richard Watson Gilder, editor of *The Century Magazine,* said: "I heartily approve of the idea of the Municipal Art Exhibit. It can be made of very great use in the movement for the better government—that is, honest and scientific government—of our American municipalities." Professor Edmond J. James, of Chicago University, said: "There is certainly no more important subject now before the American public than that known as municipal government in the large sense of the term, and everything which can be done to throw light upon the problems of municipal life will, I am sure, serve a very useful purpose. I am especially glad to know that you are planning so far ahead. It takes time to work up properly such an exhibit." Hon. Carroll D. Wright, Commissioner of Labor, Washington, D. C., said: "I am sure that all such plans as that outlined by you accomplish a great deal of good, and I should hope that something of the kind would be done." Dr. Albert Shaw, editor of *The Review of Reviews,* said: "I am very strongly impressed with the excellence of the idea. I do not know any subject which lends itself more attractively and feasibly to representation."

President Roosevelt, then Governor of New York, ex-Mayors Low and Strong, Mr. John C. Olmstead, Professor L. F. Rowe, of the University of Pennsylvania, and a score of others prominent in municipal affairs, spoke highly of the plan, expressing the hope that it would be adopted by the Exposition.

Simultaneously with the Municipal Art Society a similar idea was incorporated in a series of resolutions passed by the American Society of Civic Improvement, which was held in Buffalo a short time ago. Since its presentation to the Exposition authorities it has received the endorsement of many other organizations and been widely commended by the press.

By the adoption of this plan the Louisiana Purchase Exposition will be sure of one novel feature which will not only be great but unique, for it has never been carried out by any world's exposition in the completeness in which the Municipal Art Society presents it.



RECORDS KEPT IN FIRE-PROOF CASES

New Orleans, La., Sept. 18, 1901.

Editor Municipal Journal and Engineer:

The various departments of the city of New Orleans have their individual way of filing records, etc., very much the same as prevail in business houses, so as to be easy of access to the public.

The records of the city are kept in the municipal archives, under charge of a keeper of archives, and for no reason can they be taken from the City Hall.

The papers, documents and proceedings of the City Council cannot be taken from the City Hall without a special resolution of the Council, and are under charge of the Clerk of Council.

The books of the Comptroller are kept in fire-proof metal cases, erected at quite some expense, and are proving highly satisfactory.

Paul Capdevielle, *Mayor.*

HOW WACO HANDLES ITS GARBAGE

Waco, Texas, Sept. 10, 1901.

Editor Municipal Journal and Engineer:

In regard to the methods employed as to cost, manner of collection and disposal of ashes, rubbish and garbage, in our city, we, first, own a garbage furnace; second, we run four sanitary carts. These collect all garbage matter, rubbish, etc., and deliver the same to the garbage furnace. All dead animals and offal of all description are cremated in the furnace.

These garbage carts cost, in round numbers, about $60.00 a month apiece, for the men and horses. It costs us to run the garbage furnace, including fuel and man, about $100.00 a month.

This has been a very satisfactory arrangement, and we regard it as the best investment we have made. Our city is very healthy, last year showing only 9½ deaths to each thousand inhabitants. We have a complete sewerage system, and this, together with our vigorously enforced sanitary laws, produces the result as above stated.

J. W. Riggins, *Mayor.*

REVENUE FROM FRANCHISES

CHESTER, Pa., Sept. 25, 1901.

Editor MUNICIPAL JOURNAL AND ENGINEER:

As to the terms granted to street railway companies, water works, telephone and other quasi-public corporations, they are, in the main, as follows:

The street railway company is to pay a car license tax of $10 a car each year; to pay the cost of paving streets for the distance of three feet and a half each way from the centre of the tracks; to pay the cost of paving all intersections on the streets granted; to prevent the cars raising dust, by sprinkling; that trolley poles shall be a certain shape, height, painted, and at a certain distance apart; to keep in repair the streets granted for the distance of three feet and a half each way from the centre of the tracks; prescribing the gauge of the railway; that the width of cars shall not exceed seven feet six inches; prescribing the time in which the road shall be completed and in operation, otherwise franchises shall be forfeited; prescribing the penalty for the violation of the provisions of the ordinance, such as not sprinkling the streets, and not keeping them in repair, etc. In special instances the company has been made to pave the street full width, and to do the grading, build bridges, etc.

Our local gas company has been here a great many years, and no special terms were prescribed when they entered upon streets. It is prohibited from laying pipes during the winter months without a special permit; must obtain a permit before laying any pipe at any time, or making any connections, and subject to the other ordinary police regulations.

The city does not own its own water works, but the water is supplied by a private corporation, and there is an agreement between the city and the company prescribing that the water shall be reasonably pure, and the prices to be charged. The company is also subject to the same police regulations as in the case of the gas company.

The telephone and telegraph companies pay a pole license tax of $1 for each pole per year, and the Electric Light Company does the same. The telephone companies furnish a certain number of free 'phones at the City Hall, fire houses, etc. The ordinance also prescribes 'phone charges—$30 for places of business, and $20 for residences.

A. A. CHOCHRAN, *City Solicitor.*

A NEW METER BOOK

ASHTABULA, O., September 12, 1901.

Editor MUNICIPAL JOURNAL AND ENGINEER:

THE accompanying illustration will show the kind of a meter book in use in my office for the past year for the municipal lighting plant. The feature that is of especial value in this book is that the present month's reading is larger than that of the preceding and the calculation is more accurately made than when arranged in any other way. The amount consumed is calculated and written in red ink, and last, or higher reading being written above the previous reading, thus placing the figures in proper position for subtraction. All bills can be made out directly from the meter book. At the end of the year the book is filed away and, as the consumers' names are arranged alphabetically, comparisons can be made from year to year for the same months.

I shall be very happy to furnish any further information to those wishing it.

F. W. WAGNER, *City Clerk*

COMPETITIVE GARBAGE SYSTEM

SOUTH OMAHA, Neb., Aug. 29, 1901.

Editor MUNICIPAL JOURNAL AND ENGINEER:

We have the competitive system in our garbage department. Prior to its adoption the city had a garbage master, who had exclusive charge of hauling garbage for both city and private individuals. Under the present system any person, procuring a license at a cost of $25.00 per year, and securing the city with a bond, is entitled to haul garbage under specific restrictions as to kind of vehicle used, time of day for hauling night soil, etc.

The city garbage is hauled under contract to lowest bidder holding a license from the city. This plan has worked admirably, so far having very little, if any, trouble or complaint. At present we have three licensed garbage haulers. This number gives the people competition which seems to have regulated prices in a satisfactory manner.

A. R. KELLY, *Mayor.*

FRANCHISES SOLD AT PUBLIC AUCTION

ALBANY, N. Y., Sept. 17, 1901.

Editor MUNICIPAL JOURNAL AND ENGINEER:

Up to the year 1900, all the franchises granted in the city of Albany to street railways, gas, electric light and telephone companies were given away unconditionally. The water works are owned and operated by the city and have been for many years.

In the year 1900 an application was made for a franchise for the construction and operation of about a mile and an eighth of street railway to connect a road being constructed from Schenectady with the tracks of the company operating the street railway system in the city of Albany. This franchise was sold at public auction, a minimum price of $2,500 and three per cent. of the gross receipts being required under its terms. The franchise was purchased for that amount. This year a franchise has been passed by the Common Council for an extension of a street railway, the minimum price fixed being $500. That is now being advertised for sale, and, of course, we cannot state what it will bring. Under the charter for cities of the second class all franchises must be sold at public auction to the highest bidder. The aim of the present city administration has been to get as much as they could by fixing a minimum price in the ordinances.

ARTHUR L. ANDREWS, *Corporation Counsel.*

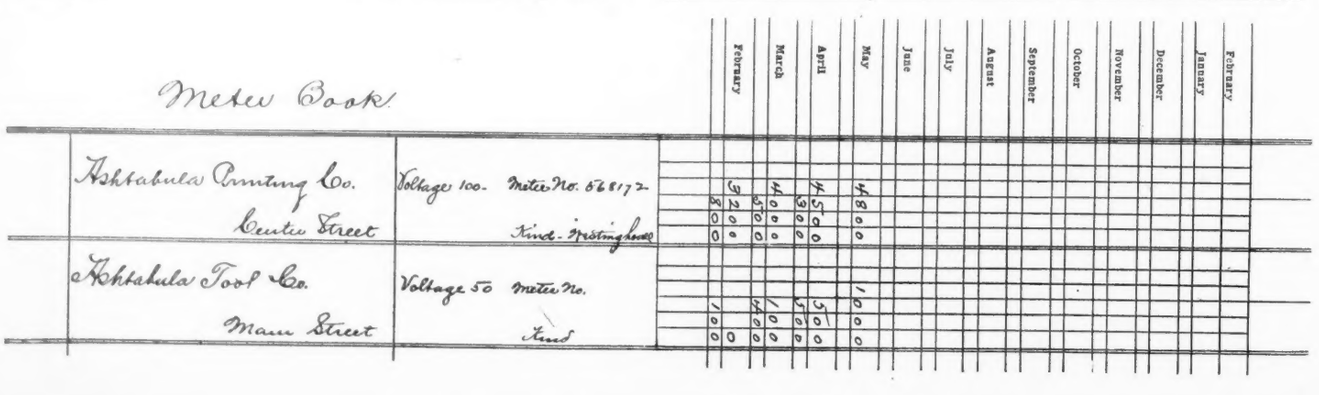
WHO PAYS DAMAGE BILLS FROM RIOTS?

AKRON, O., August 26, 1901.

Editor MUNICIPAL JOURNAL AND ENGINEER:

I would like to have you answer the following questions about the riot which occurred in Cincinnati in the early '80's, I think:

1. What was done for the citizens of Cincinnati who sustained loss during the riot?
2. If the losers were re-imbursed, to what extent, and by the authority of what law?
3. Who paid the bills; the city or the county?
4. Is there any law in the State of Ohio by which sufferers from a riot can collect for property damages?
5. If no damages were collected in Cincinnati, why not?



6. Did not Allegheny county, Pa., make good all losses sustained during the great riots in Pittsburg?

7. To what extent did that county pay losses?

8. By what law were losses paid?

Recorder A. M. Brown, of Pittsburg, replied to our question touching the losses in that county, as follows: "Allegheny county made good all losses sustained during the riots in Pittsburg in 1877, which amounted to over $3,000,000. The payment of these losses was authorized by an Act of the Pennsylvania Legislature."

Corporation Counsel Charles J. Hunt, of Cincinnati, said about the riots which occurred in that city in 1884:

"The property destroyed in the riot of 1884 was county property, and no damages were paid by the city nor by anyone else by reason of such riot. The only law in this state making a city liable for damages by reason of a riot is known as the "mob violence law," and is intended to apply only to lynching. This law, found in volume 93 of our annual laws at page 162, and known as Sections 4426-4, 5, 6, 7 and 8, in Bates' Revised Statutes, makes the county in which the lynching occurs liable to the person suffering such lynching, or to his legal representatives, in a sum not exceeding $5,000. The law also gives the county compelled to pay such damage a right of action against the members or against any member of such mob for the damages which it might be compelled to pay. Such county is also given a right of action against any other county from which the mob came. Such law has been upheld as constitutional by the Supreme Court of our State in the case of Commissioners vs. Church, et al., 62 Ohio State, 318. There is no other law in our State making a county or a city liable in damages by reason of a riot or for mob violence. On the contrary, our Supreme Court in the case of Western College vs. The City of Cleveland, 12 Ohio State, 375, decided in 1861, that 'the city was not responsible for the destruction of property by a riotous assemblage of persons or for the neglect of officers in not preserving the peace and preventing such destruction.' This case has been cited with approval in numerous subsequent cases."—[EDITOR.

BINGHAMTON WANTS ELECTRIC CONDUITS

BINGHAMTON, N. Y., Sept. 16, 1901.

Editor MUNICIPAL JOURNAL AND ENGINEER:

The question of subways for laying high tension electric wires underground, where they cannot kill people, is one which all cities will have to take up in a short time. I believe that the city should construct and operate its own subways, leasing space to the different corporations, and, in that way, a city would be sure of competition in telephone and electric light service. We have five different companies in this city with poles on the streets, so you can see that we have about gone the limit in the pole question, and as we have recently placed a contract with a new electric light company for three years we are liable to have another crop of poles.

The new company is to build an entire new plant, with all modern improvements, giving the city the privilege, at the end of three years, of buying the plant at the appraised value, the city appointing one of three appraisers, the company another and the two choosing a third. The company also agrees to take its pay in the amount raised each year for lighting in the tax budget. For example, we raise four or five thousand dollars each year for lighting purposes. Now instead of paying that to a private corporation for light we will apply it on the price of our plant, so that, in the course of five or six years, we will own our plant and not issue a bond nor increase the tax budget.

The difference in price on a three years' contract, between the old and new, is a saving to the city of about $10,000, and if we can get subways of our own and make the company pay rental, I think we will be in fair shape.

We are also having a fine independent telephone service put in here which will charge $15 for residence and $35 for business service, per year.

H. H. WOODBURN, *Alderman.*

PERSONALITIES

—Mayor Boynton, of Niles, O., is visiting the Pan-American Exposition at Buffalo, N. Y.

—The New York Women's Health Protective Association will erect a memorial to the late Colonel Waring.

—Mayor Hatch, of Camden, N. J., has refused a permit to the Socialists to hold an open air meeting in the city.

—Mayor James M. Seymour, of Newark, N. J., has been nominated by the Democratic party for governor of the state.

—A committee of Harrisburg, Pa., is endeavoring to secure a suitable memorial for John Harris, the founder of the city.

—Mr. J. P. Force, of Columbus, O., and superintendent of streets there, has planned many of the sewerage systems of the Ohio towns.

—Mr. Crawford Lindesay, Assistant Engineer of the Durban Town Council, Natal, has been appointed Engineer of the Borough of Salisbury, Rhodesia, South Africa.

—We are indebted to Mayor B. F. Deahl, of Goshen, Ind., for a copy of the illustrated edition of the *Goshen Daily News* for April 15, 1901, containing a history of the city.

—Dr. Robert Fischer, assistant on the chair for Agricultural Hydraulics at the I. R. High School of Agriculture, Vienna, Austria, is viewing the water works of this and other cities.

—Mr. Edward Wilmann, engineer in charge of bridges in Chicago, has been dismissed by the city engineer for misconduct in office. Charges will be preferred against him by the Civil Service Commission.

—Will Y. Ellett, formerly assistant Fire Chief of Elmira, N. Y., has been declared illegally dismissed from his post by the Commissioners according to a decision of the Appellate Division of the New York Supreme Court.

—Hon. J. A. Johnson, Mayor of Fargo, N. D., and president of the League of American Muncipalities, will read a paper before the convention of the Iowa League of Municipalities at Oskaloosa, Ia., on October 10, upon "Municipal Ownership of Public Utilities."

—Mr. Erastus C. Knight, State Comptroller of New York, has been unanimously nominated for mayor of Buffalo, N. Y., by the Republican City Convention. Herbert P. Bissell will probably be his opponent on the Democratic side.

—Mrs. Cushman K. Davis, wife of the late Senator, has decided to give part of her husband's valuable library to the city of Minneapolis, Minn. The volumes will number about 3,500, and formed what the Senator called his reference library.

—Mr. Morris W. Mead, superintendent of the Bureau of Electricity of the city of Pittsburg, Pa., has been made one of the victims of the infamous "Ripper Bill." Like many other heads of departments he has been dismissed from his position to make way for political opponents.

—Rintaro Naoki, C. E., engineer of the city of Tokyo, Japan, and Yeiji Nakajima, chief engineer of the city of Tokyo and professor of the Tokyo Imperial University, are inspecting the water works in this city. They will remain in this country about a month to visit other works.

—President Benjamin Lee, of the American Public Health Association, at the convention in Buffalo, N. Y., suggested that the government assign one-half of the Isle of Pines in the West Indies to the use of physical lepers, and the remainder to the moral lepers, meaning Anarchists and their sympathizers.

—Mr. W. M. Berry, superintendent of the park system of Minneapolis, Minn., states that his city has as complete a system as any other place, but as regards the maintenance of the parks she is far behind. Mr. Berry has been visiting the parks in the eastern cities, and from his observations considers that people must learn the value of parks before they can be appreciated.

ODD THINGS RELATING TO MUNICIPALITIES

The Office Seekers' Paradise—A Frank Saloon Keeper—Women as Fire-Fighters—City Pays Bounty on Rat Tails—Civil Service Absurdity—Utopian City of Zion

WOMEN AS FIRE-FIGHTERS.—The fire department of Mont Clare, Ill., has two women, Miss Sayre and Mrs. Ames, as captain and assistant marshal. The women of this Illinois town are used to fighting fires, as most of the men are in Chicago during the day on business, and the places are not sought after by men because the compensation does not tempt them.

* * *

A MUNICIPAL WOODYARD, which is proposed by the city of Newton, Mass., has become a bone of contention with parties inside and outside the city administration. Its feasibility is gravely questioned by the more conservative element, while the younger blood maintains that it would afford an opportunity for providing for the needs of some of the poor families which receive help every winter. It is a novelty that is not often indulged in by cities the size of Newton.

* * *

LEYDEN SELLS ADVERTISING SPACE.—The little Dutch municipality of Leyden has an eye to business, and manages all the public advertising, making a handsome sum out of the sale of space to advertisers. A part of its object in doing this is to rid the city of the numerous ugly sign and bill boards which are so common in American cities. The authorities will not permit their picturesque canal-cut streets to be marred by unartistic signs or advertisements. To further this plan the city erects at the principal corners and by the canal bridges, boards of neat and attractive designs for all public notices. A projecting top prevents the rain from tearing or washing away the bills. The boards are surmounted by ornamental woodwork and the advertising is thus not only kept in bounds, but is made as nearly artistic as possible.

* * *

WHAT IT COSTS TO ADVERTISE MANXLAND.—American municipalities will be interested to know of the novel practice which has long been in use by the authorities of the Isle of Man. The Manx Parliament believes in the free use of printer's ink, and for that reason sets aside a sum every year to be expended in advertising the attractions of the island. A small advertisement, which appears in the daily and weekly papers of London, cost a trifle over £435. The official guide, issued once a year, cost £408. Circular letters, photographs, lantern slides, weather reports and advertisements in guides, made the total expense for the year ending March, 1901, £1,756. Since the adoption of this scheme a few years ago the number of visitors to the island has been trebled and the money expended in this manner is considered the best kind of an investment.

* * *

A FRANK SALOON KEEPER.—A day or two previous to Thursday, September 19, the day designated as one of universal mourning for our late President, a Brooklyn saloon keeper posted the following on the door:

"NOTICE.
"In Respect to the Memory of
"Our Late President,
"Business at This Place Will Be Conducted
"The Same as on Sundays."

Upon the day appointed the front door was closed, and the "family entrance" was open in strict consistency with this Tammanyite's patriotic declaration. In other words he said: "In memory of our late President I will conduct business to-day the same as if I were violating the law."

* * *

CITY PAYS BOUNTY ON RAT TAILS.—Last February the Municipal Council of Stockholm passed an ordinance offering to pay 10 öre (about three cents) for every rat-tail that was brought to the Police Headquarters. Rats had become so numerous as to imperil the health as well as the comfort of the population and sanitary officials attributed to them the spread of contagious diseases. Therefore a war of extermination was decided upon, a bounty was offered, and up to September 1st more than 125,000 tails have been brought in by the rat catchers. Several men went into the business and advertised in the newspapers offering to rid premises that were afflicted by the nuisance for a nominal fee. Thus they doubled their earnings, and made a profitable thing of it. The war is still going on, but the bounty has been reduced to 5 öre per rat, which is about a cent and a half in our money. Even at that price the rat catchers can make a good living.

* * *

CIVIL SERVICE ABSURDITY.—Civil service is all right in its place, but it places its promoters in an absurd light when carried to an extreme. For instance, as seen in the following advertisement which is clipped from *The City Record*:

"MUNICIPAL CIVIL SERVICE COMMISSION,
"No. 346 BROADWAY,
"NEW YORK, August 26, 1901.

"Public notice is hereby given that an examination for the position of office boy will be held, commencing Monday, September 9, 1901.

"The subjects of this examintion are as follows: Handwriting, writing from dictation, English spelling, arithmetic and letter-writing.

"Applications for this examination will not be issued or received after Wednesday, September 4, 1901, 4 p. m.

"LEE PHILLIPS, Secretary."

* * *

THE OFFICE SEEKERS' PARADISE is located "way down East," not in the Nutmeg State as might be supposed, but in the good old State of Maine. It bears the euphonious name of Perkins, having been named after Col. Thomas H. Perkins, the founder of the deaf and dumb home of South Boston, Mass. It has a population of seventy-two, and of that number sixteen are voters. It may be that on election day there will be some disappointment at not being selected to fill the highest office in the village, but every one is sure of receiving an official plum, for there are just sixteen offices to be filled, so that every voter is sure of an office. Perkins is located on the shore line of Swan Island, which is washed on all sides by the waters of the Kenebec, whose main channels on either side are navigable by steamers of considerable draught. The limits of the town are about four miles long and one mile wide. It has been a favorite summer resort for Bostonians for many years, the set frequenting its haunts being very select. The "madding crowd" has never invaded its quiet precincts. Some of the Selectmen make enough from the "summer boarders" to run their families for an entire year, and the salaries of the officials are nearly all paid by the fees collected for hops, private theatricals, entertainments, etc., which are held during the summer season.

UTOPIAN CITY OF ZION

A NEW and novel city is building in the State of Illinois, but, if the founder and his followers are successful in their project, this city of Zion will be the one city in the world for "God's People." The founder and director is the Rev. John Alexander Dowie, head of the Christian Catholic Church, and his city will be located on the shores of Lake Michigan, midway between Chicago and Milwaukee. Over 1,000 acres of land have been purchased outright and an option secured upon 5,500 acres more. After a complete survey had been made of the land, the Chief Engineer, Mr. Burton J. Ashley, so planned the sewerage and drainage systems that the best sanitary conditions will be secured to the needs of the inhabitants. Garbage and other refuse will be well taken care of, so that the water supply will not be contaminated. The water supply will come from an artesian well, a quarter of a mile in depth, as long

as that will suffice for the people, afterwards the water of the Lake will be filtered and pumped to the city.

All the streets in this city have been planned to be as commodious as any travel would warrant. Curb lines will be strictly adhered to, and the lawn parkways will be ornamented with trees and shrubbery. The sidewalks will be laid all over the city by the investment association. In laying out the streets, it has been planned to give every lot in the city unhindered service in the way of transportation, sewerage, water, gas and electric light mains, telephone connections and every other advantage of a model city. The general plan of the city is modelled somewhat after that of Washington, D. C., four great boulevards radiating from Zion Temple, which will be in the centre of the city. All overhead and underground wires, pipes and sewers will be confined to the broad alleys and thus, when once the streets are paved, there will be no need to tear up the pavement to make repairs.

The outdoor life for the citizens will be made an important feature of the city. Many beautiful parks will be built up in and about the city, and everything done to keep them in the best of condition. A boulevard will encircle the centre of the city and connect nearly all the parks. Besides the gardens and shaded portions of the parks, playgrounds will be provided in abundance where all may come and obtain healthful exercise. To still more assure the health of the community the lots of the city will vary from forty to 100 feet frontage with a depth or from 130 to 200 feet, and, as but one house will be allowed on a lot there will be plenty of light and air.

The administration of the city will be in a government of its own elected by the citizens, and they will also elect representatives in county, state and national affairs, and will recognize the common laws. No party politics will be tolerated, and the city's money will be spent for the city's improvements with no waste. Neither trades unions nor trusts will be permitted within the corporate limits of the town. A living wage will be paid, and, after capital and labor have had their rightful share in the proceeds of the industries, one-tenth of the remaining profits will go to Zion's general fund and the rest will be divided into proper proportions between capital and labor, according to the amounts earned by each. Goods will be bought in an open market. There will be co-operative stores and merchandise will be paid for and expenses taken out of the sales. Then, after a reasonable rate of interest has been allowed for the capital invested, the remaining profit will go to the general fund, to the purchasers according to their purchases and to the employees in proportion the salaries bear to the capital invested. Two newspapers will be published in the city—one in the morning the other at night. Schools, colleges, a university and libraries are to be established. The public school system will not be sanctioned and the education of the children and youth will be religious, and "Messengers" will be trained to go out into the world and proselyte. Night schools, popular lectures and special tutoring will be available for the day workers. Lodges, protective associations, Greek letter societies and the like will not be tolerated.

Prosperity and happiness are guaranteed to all who will invest in the coming city. The General Overseer and his staff will supervise and control all the affairs of this modern Utopia.

CURRENT NEWS AND PRACTICE AMONG THE CITIES

Free Text Books Enjoined—Toledo's Gas Plant Sold—Shower Baths in School—Brooklyn Bridge Is Safe—Municipal Fire Insurance—Greater City of Montreal—No Street Cars—First Public Library—Briquettes from Garbage

WASTE PAPER BOXES.—The city of Moline, Ill., has now an ordinance placing boxes for waste paper about the streets.

* * *

NO STEAM BOILERS will be allowed under the sidewalks hereafter in Chicago. The Mayor has ordered their removal and the inspectors will carry out his instructions.

* * *

MUNICIPAL OWNERSHIP OF WATER WORKS at Los Angeles, Cal., seems an assured fact after long agitation; $2,000,000 have been voted by the city to acquire the works of the existing company.

* * *

OVER TWO CENTURIES OLD.—This year the city of Norwalk, Conn., celebrates its 250th anniversary of its recognition as a township. The citizens recently devoted several days in celebrating the event.

* * *

ALCOHOL LAMPS UNSUCCESSFUL.—The railway officials of Prussia have been trying alcohol lamps in competition with those burning acetylene, but on account of the unpleasant odor emitted by the former they will not be used.

* * *

OLD HEN LEGISLATION.—In Los Angeles, Cal., there is an ordinance imposing a fine of $5 for allowing chickens to run on the streets and other people's property. The success of the ordinance is such that the city of Oakland will adopt one similar to it.

* * *

TO BURN HOSPITAL.—The president of the Jersey City Board of Health, Dr. John D. McGill, has declared that the City Hospital is so infected with disease germs that it should be burned. The sanitary conditions are so bad that it would be impossible to remedy them.

* * *

HOTEL RUNNERS.—The Board of Aldermen of the city of St. Paul, Minn., have passed an ordinance abolishing the licenses of the runners for the hotels. Those runners that now have licenses will be allowed to continue until the licenses expire, when no more will be issued.

CAMPAIGN LIME LIGHT.—The Citizens' Union of New York City have started the campaign against Tammany by sending out men with stereopticons to show pictures and sentences condemning the rule of the Hall. It is the intention of the Union to have one stereopticon in every assembly district in the city.

* * *

WANTS ELECTRIC WIRES UNDERGROUND.—The City Electrician of Atlanta, Ga., wants the city to comply with its own ordinance compelling all wires to be placed underground. The ordinance requires that the poles be taken down, but as the city's wires are on them the ordinance cannot be obeyed.

* * *

THE GREATER CITY OF MONTREAL may soon be a fact. The City Council is looking into the matter, especially as regards the financial standing of the several towns that would be included in the consolidation. The Island of Montreal, thirty-two miles long by ten miles wide, contains twenty-five municipalities.

* * *

TUNNEL TO USE THIRD RAIL.—Contracts have been let by the Rapid Transit Subway Construction Company, of New York, for electrical apparatus, alternators, exciters, transformers, etc., to be used on the third rail system that will be the method by which the cars will be run in the subway under course of construction.

* * *

TO SUPPRESS STREET STANDS.—Mayor Hughes, of Topeka, Kan., declared war on the stands that were located about the parks on the west side. They paid no licenses, and the only excuse that was offered for allowing these stands to exist was that, if they were suppressed, their proprietors would have to be supported by the city.

* * *

CANNOT ATTEND THE RACES.—The Mayor of Buenos Ayres, Argentine Republic, has issued orders to the effect that all employees of the municipality who handle the public funds must not attend the races. It was found that on the day of a race most of these officeholders were absent from their posts and at the race track.

FREE TEXT BOOKS ENJOINED.—The public school trustees and the scholars of Chicago, Ill., are at present without any text-books. An appropriation had been granted to supply the books free, but the German Catholic societies got out an injunction restraining the trustees from spending the money, and so the scholars have been getting along without books.

* * *

LONDON'S DIRTY STREETS.—Because London is governed by several independent bodies its streets will always be dirty. They are either muddy, slushy or dusty, and are littered with all sorts of matter. Goods are delivered across the sidewalks at all hours, omnibuses can block the streets as they please, and the soft coal smoke from the chimneys render the air filthy.

* * *

'BUSSES BURN ACETYLENE.—One of the omnibus lines in London has adopted the system of acetylene for lighting their rolling stock, and the other lines will soon follow. After six months' trial the experiment has proved a success. On account of the keen competition of the underground electric lines the 'bus lines were compelled to adopt radical innovations to retain their patronage.

* * *

SHOWER BATHS IN SCHOOL.—In Public School No. 1, in New York City, the principal has introduced shower baths for the use of the boys. Their use is not compulsory, but the boys need no urging. Fifteen minutes is allowed for the bath, including dressing and undressing. At present fourteen boys are sent down to the baths at one time, and at this rate from 150 to 200 can bathe every day.

* * *

ACETYLENE LIGHTHOUSE.—The tests of the new illuminant for lighthouses that have been carried on at Genoa, Italy, have been most satisfactory. For a period of 100 days, four separate generators supplied the gas for ten hours per day. It is said that the electric light at Tino, forty miles away, could not be seen at Genoa, but the acetylene light at the latter place was plainly visible at Tino.

* * *

NO STREET CARS.—The city of Carlsbad, Bohemia, up to August, 1901, had no street cars of any description, all transportation being by cabs and omnibuses. The city has a population of 15,000 permanent residents, which number is augmented each year from April to October by about 40,000 visitors. A street car company is now being formed, however, and will prove a blessing to the inhabitants.

* * *

PREVENTION OF ELECTROLYSIS.—The City Council of Norfolk, Va., has passed an ordinance compelling all companies using electricity to adopt the most approved appliances to prevent the escape of the fluid. From time to time, as the needs require, the appliances must be improved at their own risk and expense. The street railway company must also pay all damages caused by electrolysis to the water mains.

* * *

BROOKLYN BRIDGE IS SAFE, but the margin of safety has been declared by the engineers appointed by the District Attorney to investigate the matter to be too small. They declare that the bridge can be made safe without disturbing traffic if a few repairs and changes are made. The cost to place the structure in a condition to withstand all the traffic that it would be subjected to would not exceed the sum of $100,000.

* * *

GRADE CROSSING ABOLISHED.—The committee on grade crossings in the city of Allegheny, Pa., have decided on the methods to be pursued in doing away with the grade crossings. Some of the streets are to be lowered so that the road will pass over them; in other cases the road is to be elevated to pass over the streets. A few streets are to be closed. The city engineer estimates the cost of the changes to the city at $225,000.

THE VALUE OF A WATER TOWER was well shown by the experience of La Salle, Ill., where formerly was installed a direct-pumping system of water works. The boiler house of the works caught fire, but the pumping station being independent of the house, the pumps could be run until the roof fell in and broke the steam pipes. As the house was below the street level, the mains themselves furnished sufficient water to extinguish the fire.

* * *

"CITY OF FATAL RAILWAY ACCIDENTS" is the title that could be applied to Chicago, according to the statistics that have been compiled by the Federal Labor Bureau. More people meet death there by this means than anywhere else in this country. In 1900, 330 were killed in Chicago, while the city having the next highest list of similar deaths was New York, with a total of 124. In Chicago, steam cars killed 257, street cars seventy-three.

* * *

CITY OWNERSHIP OF SUBWAYS.—The special committee of the City Council of Rochester, N. Y., which had under consideration the municipal ownership of subways has reported in favor of the project. The committee were unanimously in favor of it, but differed in respect to the mode of procedure. The committee obtained data from the Rochester Gas and Electric Company and from city officials all over the country, who had had experience in this matter.

* * *

BRIQUETTES FROM GARBAGE.—A process has been discovered in France by which garbage can be converted into briquettes. The refuse of abattoirs, fish markets, etc., straw, paper, and the like, are minced and mixed with tar and naphthalene. The mass is then kneaded, dried and pressed into briquettes. It is claimed that they will burn brightly, have a slight odor of gas and engender heat slowly. With a better process of manufacture they will give less ash and give as much heat as coal, but with no smoke.

* * *

FIRST PUBLIC LIBRARY.—The town of Peterboro, N. H., has the proud distinction of having established the first free public library in the world. Other cities had accepted gifts for libraries, and there had been in Europe for many years municipal libraries, but Peterboro was the first place to vote money for the formation and support of a free public library. This was in December, 1799. In 1834 the first catalogue was issued showing that the books were mostly religious works, but travel and fiction were respectively represented.

* * *

WATER PIPES DAMAGED.—The damage to the water pipes caused by electrolysis in the city of Dallas, Tex., is so great that the city officials are afraid that an important section in the business portion will soon be entirely destroyed. The strictest regulations as to prevention of damage to pipes were imposed upon the street car company when the pavement in an important street was laid, but it was not long before leaks began to show themselves in the mains which, upon investigation, proved to be due to the escaping electric current from the trolley line. A thorough inquiry will be made in the matter by the Mayor.

* * *

TOLEDO'S GAS PLANT SOLD.—Since 1890, when the municipal gas plant was established at Toledo, O., it has been the centre of the stormiest kind of politics, but at last it has been sold. This natural gas plant cost the city $1,500,000. In 1890 the people voted to issue $750,000 in bonds to go into the gas business, but since then $1,050,000 additional bonds have been issued, $499,500 has been paid in interest, and there will be considerable more of the latter to pay before the city will be free. The City Council has just leased the plant to the Toledo Gas Light and Coke Company for $6,500 rental per annum, with the stipulation that the illuminating gas be sold at 95 cents a thousand cubic feet and fuel gas at 70 cents. The failure of the municipal plant is stated to be due to opposition on a large part of the citizens, failure of the gas supply in the city's wells and competition of the private company.

CONVENTION DATES

OCTOBER

State Telephone Association. Owensboro, Ky., October 1-2.

The International Cremation Congress meets in Buffalo, N. Y., October 1-3.

The Central States Water Works Association holds its fifth annual convention at Evansville, Ind., October 1-3.

The American Society of Municipal Improvement meets at Niagara Falls, N. Y., October 1-4. D. L. Fulton, Allegheny, Pa., secretary.

The National Good Roads Convention will be held in Buffalo in October.

Colorado Municipal League will hold its convention at Colorado Springs in October.

The State Library Association will meet at Sandusky, O., October 1-4.

The State Firemen's Association of Pennsylvania will assemble in Philadelphia, October 1-4. James A. Green, Carlisle, Pa.

State Firemen's Association. Missoula, Mont., October 2-5. E. C. Mix, Missoula, Mont.

State Police Protective Association will meet at Elizabeth, N. J., October 3.

American Institute of Architects, Buffalo, N. Y., October 3-5. Glen Brown, 918 F street, N. W., Washington, D. C.

State Conference on Charities and Corrections will be held at Owatonna, Minn., October 7-9. Miss Grace Johnson, Red Wing, Minn.

State Conference on Charities and Correction. Lima, O., October 8-11. Joseph P. Byers, Columbus, O.

League of Iowa Municipalities will meet at Oskaloosa, Ia., October 9-10. F. G. Pierce, Marshalltown, Ia.

State Municipal League. Anderson, Ind., October 9-11. Zach. T. Dungan, Humington, Ind.

American Street Railway Association will meet in New York City, N. Y., October 9-11. T. C. Pennington, 2020 State street, Chicago, Ill.

Reunion Street Railway Accountants' Association, New York City, N. Y., October 9-11. W. B. Brockway, Box 630, New Orleans, La.

Canadian Roadmaster's Association. Hamilton, Ont., October 16. J. Drinkwater, Winchester, Ont.

American Gas Light Association, Boston, Mass., October 16-18. A. E. Forstall, 58 William street, New York City.

State Conference on Charities and Correction will be held at South Bend, Ind., in October. C. S. Grout, Indianapolis, Ind.

State Library Association will meet at Burlington, Ia., in October. Miss Miriam E. Carey, Burlington, Ia.

State Conference on Charities and Correction will be held at Lincoln, Ill., in October. Mrs. H. T. Rainey, Carrollton, Ill.

State Library Association, Atlanta, Ga., October. Anne Wallace, Atlanta, Ga.

NOVEMBER

National Prison Association, Kansas City, Mo., November 9-13. Rev. J. L. Milligan, Allegheny, Pa.

National Prison Chaplains' Association will meet at Kansas City, Mo., November 11. Rev. E. R. Imbrie, Hoboken, Pa.

Prison Wardens' Association. Kansas City, Mo., November 11. N. F. Boucher, Bismarck, N. D.

National Prison Association will meet at Kansas City, Mo., November 11. Rev. J. L. Milligan, Allegheny, Pa.

THE GOOD ROADS CONGRESS

THE first international good roads congress was held in Buffalo during the week, beginning September 16th. On account of the President's death and funeral the proceedings did not receive that measure of publicity which the importance of the subject deserved, but the sessions were in the main well attended and indicated a growing interest in the movement for improved highways.

W. H. Moore, President of the National Association of Good Roads, presided. He advocated the use of convicts and pauper labor to reduce the cost of construction. He argued that this plan, where it had been tried, reduced the cost of prison maintenance. He suggested that anarchists might be profitably employed at work of this kind. Mr. Moore referred to the impetus which the growing use of automobiles was giving the goods roads movement.

The Hon. Andrew Patullo, of Woodstock, Ontario, declared that if the railroads were managed as are the rural and city streets they would soon be in bankruptcy. "Even the great Steel Trust," said he, "could not endure three years of such management. The forces of this great country may surely be organized for road-making. It is a question of saving incalculable losses. The wealth of Crœsus is not a comparison with the losses of bad roads every year. Of what use is it that the railroads and waterways are perfect, if the feeders, the little arteries of the primary roads are impassable half of the year?" Other papers were presented by Mr. John A. C. Wright, of Rochester, N. Y.; Mr. Chas. W. Ross, of the Massachusetts Highway Commission; Prof. J. A. Holmes, State Geologist of North Carolina; Hon. A. W. Campbell, Commissioner of Public Works, of Ontario, Canada; Prof. Lewis M. Haupt, of the Isthmian Canal Commission; Mr. S. S. Bailey, of Grand Rapids, Mich.; Capt. I. G. Heap, Des Moines, Ia.; Mr. Edward Daniels, of Washington, D. C.; Mr. G. F. Beam, Ontario.

The famous "good roads train," laden with machinery and material with which to give practical exemplifications of the work, was in Buffalo during the week. During the last days of the congress a mile of hard road was constructed on Grand Island in the Niagara River.

The Hon. Martin Dodge, Director of the Public Roads Inquiries, Washington, D. C., at the closing session of the congress, spoke feelingly of the death of President McKinley, and regretted that the congress had suffered in its attendance by reason of the misunderstanding as to the time of meeting on account of the assassination of the President, but he added that the cause of good roads had been greatly advanced by the congress by reason of the fact that so many States and foreign countries had sent delegates and that these delegates had brought good report of the progress of the movement from their homes.

AMERICAN PUBLIC HEALTH ASSOCIATION

THE American Public Health Association held their twenty-ninth annual convention at Buffalo last week, beginning Tuesday, September 17th, and lasting three days. It was attended by many of the noted physicians and sanitary experts of the country. Delegates were also present from Canada and Mexico.

Dr. Benjamin Lee, of Philadelphia, President of the association, presided at the sessions, which were seriously interrupted by the obsequies of President McKinley. Dr. Stephen Smith, of New York City, read a paper at the first meeting on "Municipal Sanitation and Its Progress." It was an interesting and instructive treatment of the great advances made in the United States in sanitation, showing how disease had been checked and the death rate reduced, especially in large cities.

Dr. Walter Reed and Dr. James A. Carroll, surgeons in the United States Army, addressed the convention on the "Prevention of Yellow Fever." They had been in charge of a government experiment station in Cuba last summer.

They advanced the theory that mosquitoes, of a certain variety, not only communicated the fever but that they are the only means by which it could be communicated. They, therefore, advised that the most effective way of stamping out the disease was to kill the infected mosquitoes, which they believed could be done by sulphur fumes. The two physicians also declared that there was no danger of communicating the germs in trunks or clothes.

Capt. Edward L. Munson read a paper on "Some Results of the Army Canteen or Post Exchange from the Standpoint of Discipline and Hygiene." He quoted statistics to show that from 1885 to 1891, before the army canteen had been established, there was more drunkenness and desertions in the army than during the period, from 1892 to 1897, when the canteen was in operation. A resolution was adopted by the convention in favor of re-establishing the post canteen in the interest of military sanitation and sobriety.

The spread of tuberculosis was discussed and the following resolu-

tion adopted, as being expressive of the views of the delegates on the subject;

"Resolved, That notwithstanding the advances of sanitary science the mortality from tuberculosis continues to be appalling. It has been demonstrated that by the application of proper measures this mortality may be diminished rapidly and to a great degree. Therefore every effort should be made by sanitarians to carry into effect all reasonable methods which have been shown by experience and research to be efficacious towards this end.

"Resolved, That the increase of tuberculosis in cattle and swine as shown by investigations of recent years and by meat inspection statistics is a serious matter from a commercial as well as a sanitary point of view, and call for more attention from those responsible for the integrity and protection of the public health.

"Resolved, That this association is of the opinion that sufficient facts have not been offered by Prof. Koch or other investigators to prove that human and bovine tuberculosis are different diseases; it is fully of the opinion that variability under different environments may on further investigation be found to account for the differences that have been noted, and that the germs of these diseases may yet be proved to be closely allied and identical."

Before adjournment the following officers were elected: President, Dr. Henry D. Holton, Brattleboro, Vt.; firse vice-president, Dr. Walter Reed, U. S. A.; second vice-president, Dr. Jesus Chico, Guanajuato, Mexico; secretary, Dr. Charles O. Probst, Columbus, O.

THE NERNST ELECTRIC LAMP

THE new lamp that is causing so much discussion in electrical circles at present was the discovery of Dr. Nernst and bids fair to rival the arc, if not the incandescent, light in public favor. Of course it is now in its infancy and much more must be learned about its qualities before positive statements can be made as to its real value as an illuminant. Already, however, many improvements have been made on the original lamp and some conclusions may be drawn from the experiments that have been and are being made with it.

The lamps that have been thus far developed run from those having one glower and giving fifty candle-power on a voltage of 110 to those of 2,000 candles with thirty glowers on 220 volts. The quality of the light is remarkable for its brilliancy and close approximation to daylight. All colors are seen in their proper shades. There is an absence of shadow and the light is very steady, while it is claimed that its maintenance is simple and cheap. In comparing the Nernst with the incandescent lamp it is seen that the former consumes less than one-half the number of watts than the latter for the same illumination, but requires much more attention. If, however, the Nernst be compared with the enclosed alternating current arc lamps, an equal consumption of watts shows much superior floor illumination for the Nernst and a great general illumination for the arc lamp. The steadiness and absence of shadow in the Nernst light seems to show decided superiority for it. When the lamps are first lighted they require no attention, but experience has shown that 800 hours is the average life of the glowers. Aside from the renewal of the perishable portions, there is nothing that could cause trouble. Commercially, it is intended that the renewals shall be made from the central stations, the customer removing the old holders and replacing them with new, a stock of which has been supplied him. The old holders are then collected by the company. Thus far nothing definite can be said as to the cost of these lamps, but $14 has been considered a fair price for a six-glower lamp. The cost of renewal is considerably less than for enclosed arc lamps.

The probable use of this lamp will be in place of the arc lamps, compared with the mechanism of which it is very simple. One objection to the lamp is in the necessity of the heater, a rather delicate element to replace. As shown before, the light is far superior to that of the incandescent or arc on account of its whiteness, steadiness and freedom from color. While there are no carbons to be renewed, as in the case of the arc lamp, about every eighth inspection of the new lamp is coupled with a cleaning of the porcelain surfaces. This is rendered necessary by the deposit of platinum black which is given off from the terminals of the glowers, and which reduces the efficiency of the lamp.

For about a year and a half several of these lamps have been running at East Pittsburg and Allegheny, Pa., in the laboratories and shops of those who have been experimenting with them, and have given general satisfaction. The dome of the Electricity Building at the Pan-American Exposition at Buffalo has been lighted by festooning ninety-two six-glower lamps from a chandelier. On the floor there are distributed twelve six-glower, twenty-four three-glower and eight one-glower lamps.

SERIOUS LABOR DISTURBANCE IN SAN FRANCISCO

THE many assaults that have occurred in the city of San Francisco, and which, in several cases, have ended fatally, have roused the police to vigorous action to suppress the lawlessness. The striking teamsters and their sympathizers regard this activity of the police as an invasion of their rights. The officials of the union called upon Mayor Phelan to enter a protest and demanded that the police cease their interference with the union men that patrol the streets. Their visit ended in failure, however. The Mayor told them that he would investigate their causes of complaint, and, if true, would prevent any abuse of power on the part of the polce. As long as violence existed, nevertheless, the police must have the support of all peaceable citizens in their endeavor to keep the streets safe for pedestrians. He told the leaders that it was an established fact that non-union men were stopped on the streets, asked if they belonged to the union and whether they would give up their work. If their answer is unsatisfactory they receive serious injury. For those suspected of being non-union the streets are not safe. The leaders claimed that they had counselled peaceable methods of persuasion in inducing men not to work. The Mayor told them that no one had a right to stop another on the street if he did not want to stop, and that to prevent crime and riot the police have the power to cause citizens to move on. The result of this interview with the Mayor was not satisfactory to the leaders, as might have been expected.

It is, of course, claimed by the strike leaders that the unions are not responsible for the deeds of violence that are of daily occurrence on the streets, but this statement does not fool the people, especially when it becomes necessary for the union officials to issue passes to those in good standing to prevent their being assaulted. The following pass is one that has been issued by the secretary of the Sailors' Union: "This is to certify that the bearer, ————, is entitled to courteous treatment by all union men." Why are such passes issued by the unions if their men commit no acts of violence?

The business men of the city have determined to stop the lawlessness, and a fund of $180,000 has been raised to provide for an increase in the police force sufficient to do it. The matter has been under consideration for some time past, and the police commissioners are said to be in favor of the movement. The Board of Supervisors will be asked to add 180 policemen to the present force, the above fund to be used to pay their salaries for the remaining nine months of the year. One policeman is allowed to every 500 of the population, and the additional 180 men will bring the number up to the limit allowed by law. It is this lack of police that is claimed to be the reason that the force is unable to cope with the situation satisfactorily.

It is stated by close observers of the war between the employers and the men that there are many signs of the breaking up of the forces of the strikers. Without grievances that amount to anything and weary of the long months of idleness, many individual members of the unions have applied to their employers for reinstatement in their old places. It is believed that, were the police to afford ample protection to those that want to work, there would be a rush back to work that could not be stopped by the strike leaders. As is always the case in these strikes, it is the few that by intimdidation and acts of violence prevent the majority from doing as they desire. The promises of the leaders that all the strikers should be taken care of financially have not panned out, and many of the men are in want. The large ship owners all state that they have nearly as many men as they can use, and that by the time the strike is over, the new men will be expert enough to fill permanently the places of the strikers.

The failure of the police to restore order in the city has led to many threats of a vigilant committee such as had charge of affairs years ago. While the men are fighting, the crops of the farmers are being stalled on the railroads, and it is said that the farmers are proposing to come into the city armed and to stand by and protect men who are willing to load the produce on to the vessels.

All reports from the city would tend to show that the place is in a state of terror, and that the situation is similar, if not worse, than that which existed at McKeesport, Pa., not long since.

HOW TO DISPOSE OF STREET SWEEPINGS

AFTER several years' efforts the Merchants' Association of San Francisco has at last succeeded in inducing the city authorities to dispose of its street sweepings by having them hauled by electric cars to Golden Gate Park, to be used as a fertilizer, instead of dumping the same on vacant lots, as has been the custom heretofore for many years.

All the sweepings from a certain prescribed area, comprising the

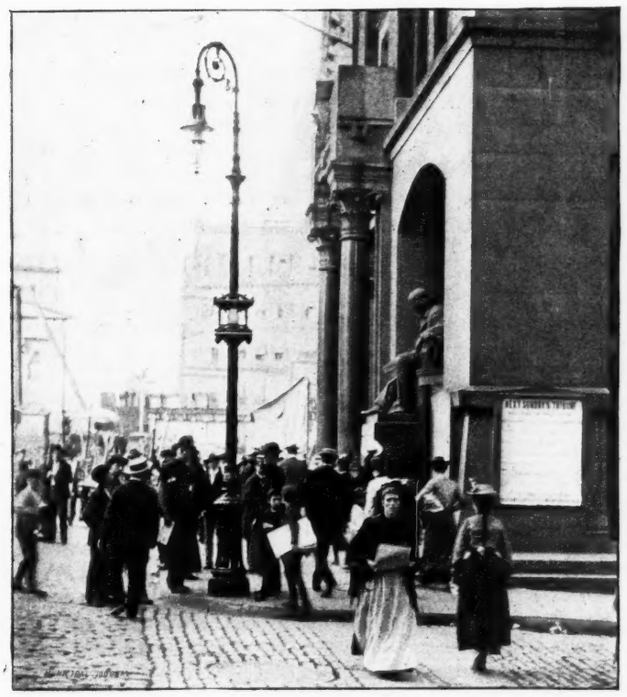


FIG. 2. COMBINED STREET SIGN AND ELECTRIC LIGHT*

principal business portion of San Francisco, are hauled by the street cleaning contractors to a central point, where bunkers for receiving them have been erected upon one of the city lots.

The bunkers are in the shape of a horseshoe. The two arms are constructed on an incline. Teams drive up one of the arms to the top of the platform and return down the other. Around the inside of the horseshoe are arranged a number of bunkers for holding the sweepings, until the same can be removed. Along one side of the platform over the bunkers, trap doors are constructed in the floor. These doors open directly beneath the wagons, which are bottom dumpers and as the sweepings are dumped they shoot down into the bunkers.

A switch is laid from one of the electric car lines on the adjacent street and runs between the arms of the bunkers. The bunkers are provided with doors opening just above the car and are constructed at such an incline that when the door is raised, the sweepings shoot into the car without further handling.

The bunkers will hold two hundred cubic yards of sweepings and from seventy-five to a hundred cubic yards are deposited there every twenty-four hours, so that the capacity for two days' supply, in case of delay in removing the same. The sweepings are hauled from bunkers over electric car lines to Golden Gate Park, a distance of about seven miles, for which the street railway company charges thirty cents per cubic yard.

At the park a switch runs from the main car line to an elevated dump, at which point the sweepings are dumped and thence hauled by the park commissioners' teams to any desired point in the park. Golden Gate Park consists of reclaimed sand hills which are now for the most part covered covered with trees and shrubbery. A great portion of the sweepings consist of almost pure manure and they have proved exceedingly valuable as a fertilizing material for the park.

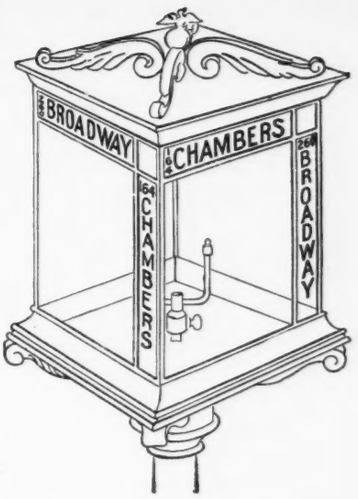


FIG. 1. SUGGESTED BY AN EDITOR

SUGGESTED STREET SIGNS

THE difficulty of providing a street sign that will answer the needs of pedestrians and passengers on street cars alike has been vexing the authorities of New York City for some time. Many are the designs that have been suggested, some good, but more of no practical value. The prime requisite of any street sign is that it must be readable both day and night and at a reasonable distance.

The introduction of the electric arc light did away with many of the old signs on the lamp posts and little attempt has been made in New York City to utilize the old posts as sign posts. A visitor in town must depend upon the knowledge of the passer-by to direct him and in many cases the said passer-by is as ignorant as himself. In some places the names of the streets are displayed upon the corners of buildings, where they run the risk of being covered by some sign. In many other places the street signs are conspicuous by their absence.

Among the many ideas suggested for a legible sign for street corners that of Mr. John A. Sleicher, editor of *Leslie's Weekly*, New York City, is as good as any presented for use on gas lamps. Fig. 1 shows the general features of this sign. It will be noticed that, in addition to the horizontal name of the street, Mr. Sleicher's sketch designates in a vertical sign the name of the street or avenue intersected. A railway passenger can see at a glance the name of the street on which he is traveling as well as the street he is just about to cross. A pedestrian need not walk around the post to ascertain the name of the thoroughfare he is on or of that which he is passing.

FIG. 3. ONE OFTEN USED

In the accompanying illustration, Fig. 2, is shown a new type of street arc lamp fixture and illuminated street sign which the department of Public Buildings, Lighting and Supplies will place in considerable numbers on the streets. The cut shows one placed at the corner of Nassau and Spruce streets as an experiment. The sign is lighted by four incandescent lamps inside the glass box half way up the post, making the sign legible about sixty or one hundred feet.

Fig. 3 shows still another design. This is not applicable to any lamp and must depend on its illumination from outside sources.

Whatever design is accepted for New York's streets, it is hoped that they will be put generously in the near future. New York City is greatly behind in this respect and might well follow the example of her former sister city, Brooklyn. There are but few streets in the latter place that are without the requisite number of signs for the guidance of pedestrians.

* By courtesy of *The Tribune*, New York.

CENTRAL STATES WATER WORKS CONVENTION

THE Central States Water Works Association, which holds its convention this year at Evansville, Ill., on October 1 to 3, is one of the local organizations that is formed to promote local interests only and act as adjuncts to the larger body of the American Water Works Association. The Central was organized five years ago as the Ohio Water Works Association, but it has expanded and now includes the territory represented by its present name.

The first convention of the reorganized association was held at Columbus, O., the second and third were at Springfield and Cincinnati respectively, and last year Columbus was again the scene of its sessions. This year Evansville will entertain the members. The attendance will be large, as all the members are intensely interested in the association. There are very few of the superintendents of water works and hydraulic engineers in the territory who are not affiliated with the organization, and such as are not no doubt belong to the class who "know it all" and so do not need the instruction that every one obtains that attends the conventions. The Ohio Valley contains 707 water works and seventeen engineering associations, and embraces, besides Ohio, the States of Indiana, Illinois, Kentucky, West Virginia, and a portion of western Pennsylvania. The present officers are: President, Harvey Cockel, Columbus, Ohio; first vice-president, Joseph P. Pater, Hamilton, Ohio; vice-presidents, Quincy Walling, Muncie, Ind.; Fred Catlin, Flint, Mich.; W. H. Glore, Covington, Ky.; Clark Howell, Charleston, Va.; C. W. Koons, Mt. Vernon, Ohio; secretary, Wm. Allen Veach, Newark, Ohio; treasurer, Chas. E. Rowe, Dayton, Ohio.

The headquarters of the convention will be at the St. George Hotel, where the rates are from $3 to $4 per day on the American plan. The meetings will be held in the Business Men's Association building, and ample space will be provided for exhibits.

NEW ENGLAND WATER WORKS ASSOCIATION

THE New England Water Works Association was organized in the year 1882, but the idea occurred to its founder three years before. In 1879 James W. Lyon, Superintendent of the Water Works at Salem, Mass., thought that it would be a good idea to bring together the men in the country that were interested in water works in order that they might derive mutual benefit from interchange of experience and discussion of methods, and thus better the profession of hydraulic engineering. The first meeting was called at Lowell, Mass., to talk over and form an organization. Only three men attended this meeting. They were: Henry Golden, of Lowell, Mass.; R. C. P. Cogge hall, of New Bedford, Mass., and Henry W. Rogers, of Lawrence, Mass. The next meeting was held at Boston, Mass., in April, 1883, and seven more joined the organization. Among these was its virtual founder, James W. Lyon, who was elected temporary chairman. A committee was then appointed to draft a constitution and by-laws, and the meeting adjourned until June 21, at Boston, where the New England Water Works Association became an accomplished fact. Its officers were: President, James W. Lyon; vice-presidents, Charles K. Walker, Hiram Nevins, Edwin Darling, H. L. Schlesten; secretary, H. C. P. Coggeshall; treasurer, Edwin Darling.

The first convention was held at Worcester, Mass., in June, 1883. The membership had then risen to forty-three. Last year, 1900, the roll showed a membership of 594. This year the twentieth convention was held at Portland, Me., on September 18-20. As on the previous assemblage in this city, eleven years ago, the first day was cold and rainy to be followed, however, by brighter weather. A number came from Boston by boat on the night of Tuesday, the 17th. The New Falmouth Hotel was made the headquarters of the convention, and there the exhibits were displayed. On Wednesday three sessions were held. The members met at the City Hall and were addressed by Mayor Boothby after which a short business session was held. At 2 p. m. the convention was called to order in the hall of the New Falmouth to listen to two papers. The first was on the "Bacteriological Anaylsis of Water and Its Interpretation, Including Demonstration of Cultures," by Charles Edward Armory Winslow, of the Massachusetts Institute of Technology, Boston, Mass. The second paper was read by George E. Winslow, of Waltham, Mass., subject, "Experiences in Reducing Water Ram Produced by Direct-Acting Pumping Engines." At 8 p. m. another session was held at which the report of a committee on "Standard Specifications for Cast Iron Pipe" was read by William W. Locke, Sanitary Inspector of the Metropolitan Water Works, South Framingham, Mass. After a short discussion, another committee reported on the "Apportionment of Charges for Private Fire Protection, and the Means of Controlling the Supply Thereto."

No meeting was held on Thursday on account of the funeral of President McKinley, and the papers that were scheduled for that day were postponed until the subsequent meetings of the association. The papers that were to have been read were: "Water Supplies of the State of Vermont," by Charles P. Moat, chemist of the Vermont State Laboratory of Hygiene, Burlington, Vt.; "Swamp Drainage for Watershed Improvement," Edward S. Larned, C. E., of the Metropolitan Water Supply, South Framingham, Mass.; "What an Engineer Saw in Venice," by Desmond Fitzgerald, Engineer of Sudbury Department, Metropolitan Water Board, Boston; "Pollution of Streams by Manufactural Wastes—Methods of Prevention," H. W. Clark, chemist Massachusetts State Board of Health, Boston; "Investigations in Regard to Coloring Matter in Waters and Methods of Removal," by the same gentleman.

On Friday, September 20, the members left Portland via the Maine Central railroad for their excursion to Sebago Lake. The steamer was taken across the lake, through the Songo River and lock, over the Bay of Naples to the foot of Long Lake, where dinner was served. The return trip was made through the lakes at 5:55 p. m., and Portland was reached about 7 p. m. The boat was taken at once for Boston, where they arrived on the following morning.

LARGEST LIFT BRIDGE IN THE WORLD

CHICAGO has just completed the largest lift bridge in the world, with the exception of one in London. The structure spans the Chicago River just south of Taylor street, and is remarkable from an engineering standpoint for its great length. The river at the point where it is spanned is 120 feet in width, and the bridge crosses it at an angle of 36½ degrees, making it 275 feet long between the points of bearing and 450 feet long from end to end.

The entire structure with the exception of the cast iron counterweights, is built of steel and weighs 4,890,978 pounds. A notable thing in connection with the building of the bridge is that the coffer dam cost less and afforded less trouble than those used in building the bridge over the canal.

The cost of the construction was $450,000, which was paid by the Drainage Board alone.

At first it was deemed impossible to span the river at this point, but despite the opinion of several engineering experts, Engineer Wisner, of the board, was convinced that it could be done. Mr. Randolph entered into consultation with the Scherzer Bridge Company, and finally arranged a modification of the Scherzer patent rolling lift bridge, and the result is the present structure.

Engineers in the city are unanimous in declaring this bridge one of the greatest feats, from an engineering standpoint, in the country. The bearings of the bridge, instead of being pinioned like those of an ordinary bascule bridge, are free and move backward and forward on a steel table.

The ordinary bascule bridge is on the principles of a lever of the first order, while this bridge works on the principles of a lever of the second order. On the whole, the movement of this bridge is much more free than that of an ordinary life bridge, and causes less of a strain.

Each moving leaf contains about 2,000,000 pounds, and, aside from having the largest span of any movable bridge ever built, the structure is especially noticeable, in that it is built for the heaviest railroad service carrying double tracks. The bridge is designed for a load of 10,000 pounds per lineal foot of bridge, in addition to a concentrated load of 100,000 pounds at any given point on the floor of the structure, this giving it a carrying capacity of more than twice that of the next longest lift bridge in the world—the Tower Bridge, of London, which is 200 feet long, and only designed for highway traffic.

RULES FOR BARBER SHOPS

THE Board of Health of San Francisco, at a meeting the other day, adopted the suggested sanitary regulation of barbers' shops as submitted by Dr. Baum, chairman of the committee having the matter in charge. The restrictions are very severe, and will apply to every barber shop in the city. Health board inspectors will visit the shops regularly and report to their superiors any violation of the rules, which are as follows:

The place of business, together with all furniture, shall be kept at all times in a cleanly condition. Floors or woodwork should not be swept or brushed dry, but must be mopped up with an antiseptic solution, preferably with a solution of corrosive sublimate, 1:500.

Cuspidores must be made with wide openings, without any beveled or rough sides, and should contain water, and when cleaned must be disinfected with any of the herein recommended antiseptic solutions.

Mugs and shaving brushes shall be sterilized by immersion in boiling water or three or five per cent. formalin solution, after every separate use thereof.

Razors shall be wiped with 95 per cent. alcohol before and after being used on any person.

Hair brushes known as "sanitary brushes," must be used. These must be sterilized by immersion in boiling water or by dipping in five per cent. formalin solution.

Combs must be kept clean and treated like brushes.

Razor strops must be kept clean and never wiped off with hand or blown upon with breath before using.

A separate clean towel shall be used for each person.

Barbers shall not blow away with their breath any hairs after cutting, but must use a towel or bulb, or fine hair brush, which must be sterilized as the hair brushes are.

Barbers shall keep their finger nails short and clean. Alum or other material used to stop the flow of blood shall be so used only in powder form and applied on a towel.

The use of powder puffs is prohibited. Instead use clean towels or absorbent cotton.

The use of sponges is prohibited.

Every barber shop shall be provided with running hot and cold water.

All wash basins must be connected with the sewer and properly trapped.

No person shall be allowed to use any barber's shop as a dormitory.

Every barber shall cleanse his hands thoroughly immediately after serving each customer.

Needles, tweezers, forceps and other instruments must be disinfected in boiling water or three or five per cent. formalin solution immediately after using and thoroughly dried by passing quickly through a gas or alcohol flame. Scissors and clippers to be treated likewise.

Barbers are warned from attempting to treat skin diseases, barbers' itch, etc., and should advise their customers to consult a physician.

The use of finger bowls is prohibited.

These rules shall be placed in a conspicuous place in the shops.

GLASGOW'S FAMILY HOME

IT seems a surprising fact that none of the municipal authorities in England have deemed it wise to follow the example set by the Glasgow Corporation some years since in establishing a municipal family home. The undertaking has proved of the greatest value to many poor and deserving families in the city, and the corporation is fully satisfied with the results, notwithstanding it involves a small charge upon the rates. The object in establishing this family home was to aid those of the poorer classes who, because of the death of a husband or wife, had to struggle to bring up a young family. The parent being obliged to go out to work, the children had to be left during the day to the more or less watchful care of an obliging neighbor who, because of her own pressing duties, could not exercise the supervision which the children required.

The home was placed under the charge of a capable matron at the start. The people for whom it was intended were, at the first, slow to take advantage of it, but after a time it began to attract them. The matron saw that the children were cared for as at home; washed, kept tidy, after breakfast sent to school, and as far as possible given all the attention that they would have received at the hands of their parents. Because of prolonged sickness the first matron resigned, but the committee in charge of the home, in consideration of the growing number of inmates, resolved to appoint a husband and wife to discharge the duties and were fortunate in securing an excellent couple well qualified to undertake the work.

There are 160 single rooms in the house, plainly furnished, each large enough to accommodate one adult and three children; a dining room for all; a kitchen having gas fires and steam cooking boilers; baths and lavatories. The building is lighted throughout by electricity and heated by hot water. The bedrooms are rented at from $1 to $1.25 per week, depending upon the number of children occupying the room with the parent. Regular meals are cooked and supplied to the inmates at the lowest possible rates.

Family Home.—Statement of working expenses and return, year 1901:

Revenue	$17.865
Expenditure	17.230
Balance	$635

The year 1900 showed a loss of $840; 1899 showed a loss of $2,500.

Cost of man and three children living in family home for one week:

Rent	$1.375
Man's food	1.450
Children's food	$1.825
Total	$3.825

The charge for one child is 45 cents per week; for two children, 39 cents per week each; for three children, 34 cents per week each.

At the start the home was designed to accommodate both sexes, but two or three years' experience proved that it was better to confine its facilities to men only. The committee were of the opinion that men left alone with families were more helpless than women would be under the same circumstances.

PENNSYLVANIA STATE FIREMEN'S CONVENTION

THE twenty-second annual convention of the Pennsylvania State Firemen's Association will meet in Philadelphia on October 1 to 4. It promises to be the largest meeting of active and veteran firemen of the season and the parade that will be held will be a monster. Three sessions will be held on the first day. There will be an excursion on the river, exhibits of fire boats and apparatus, contests and a ball. For the parade, already 126 organizations have entered with about 5,000 men. At the sessions the following six papers will be read and discussed: "Should Not All Fire Departments Be Provided with Landing or Jumping Nets?" by F. B. Bosch; "The Possibility of Burning Buildings Being Converted Into Gas Retorts, Causing Rapid Destruction," (illustrated), William McDevitt; "Should Not All Cities and Towns Have Steam Fire Engines in Reserve, Regardless of the Direct Pressure Systems from Reservoirs or Pumps?" by George Nallinger; "The Use of Deluge Sets in All Departments," Irvin A. Hahne; "The Necessity of Wearing Rubber Gloves by Firemen in All Cities and Towns Where Electric or Trolley Wires Are Strung," James A. Brown; "The Use of Storage Battery for Fire Alarm in Cities and Towns Having the Electric System," by Morris W. Mead.

The Pennsylvania State Association was formed in December, 1880. Its primary object was to forward, for the benefit of firemen, legislation which Mr. W. W. Wunder, of Reading, Pa., was trying to get through the Legislature.

MUNICIPAL CONTROL VS. OWNERSHIP

The Evils Arising from Overhead Wires—Methods of Solving the Problem—Experience of Omaha—Control Better Than Municipal Ownership

By E. F. Schurig*

THE question as to what step is advisable to relieve the public from the overhead wire nuisance and the dangers incident thereof was before our municipality, the city of Omaha, during the past year and the subject was considered and investigated by the engineering and electrical departments.

EVILS OF OVERHEAD WIRES

Considered from any point of view, certain evils are sure to arise from the use of overhead wires.

1st. Overhead wires, to the extent prevalent in cities from eighty thousand population upward, are a nuisance.

2d. The indiscriminate use thereof, such as for lighting, power, telephony, telegraphy and signalling purposes, is dangerous to life and property.

From these propositions it is evident that the overhead wires should be removed, or placed so that their location will abate the nuisance and avoid the danger.

To construct a conduit system which would place all wires within the limits of a city underground is not practical as the benefit derived therefrom would not counterbalance the enormous cost.

In congested districts of a city overhead wires are objectionable on account of the extra hazard to life and property as stated above, due to the juxtaposition of wires carrying high and low potential currents, despite all practical safeguards. Constant care and watchfulness by the owners of such systems, supplemented by systematic inspections of the authorities, make high tension wires practically safe, but when there is possibility of contact with other wires which from their nature are not safeguarded, as are high tension conductors, the risk of accidents becomes considerable.

In all cities where wires have been placed underground, such districts as demand extensive electric service for the transaction of business, were considered first for the reason that great numbers of wires were confined within a limited area, crowding them on few poles, introducing danger from crosses, breaks, and personal contact, and for the reason that such net works impeded the work of the fire department in time of fire, not considering the unsightliness of such a conglomeration of wires.

As the demand for electric service increased in other districts causing additions to overhead lines, such districts were incorporated into the underground system, extending the area of it gradually.

In view of this practice it would seem proper that for the purpose of placing wires underground in any city, a similar course should be observed.

EXPERIENCE DEMONSTRATES PRACTICABILITY

Investigation and experience of the past fifteen years have demonstrated the practicability of placing wires underground, and the cost of such disposal involves only such reasonable financial expenditures as to make the requirements of such arrangements in cities of eighty thousand population reasonable and just.

There appears yet to be a diversity of opinion among electrical men relative to the practicability of placing low and high potential wires in the same conduits. My investigation of the subject in connection with Mr. Andrew Rosewater, City Engineer of Omaha and formerly president of the Washington (D. C.) Subway Commission, lead me to the belief that no valid reason can be given why all classes of wire should not be placed in the same conduits. My conclusions are based upon the report of the Washington and Baltimore Subway Commission and also upon individual reports from Philadelphia, St. Louis and Chicago. Furthermore the experiments conducted by the Reichs-Anstalt in Berlin, Germany, to determine to what extent alternating currents will influence telephone conductors when paralleling same, conclusively prove that the effect of induction is overcome, the only requisite being that the telephone wires should be in metallic circuit, and cables properly designed.

I have no doubt but that if reasonable precaution in the design and selection of cables were not taken, induction could be noticed through considerable space.

From this it is evident that with reasonable care and the use of separate or double chambered manholes for distribution, a system of conduits with separate distinct ducts for different potential cables can be regarded practical.

ADVANTAGES OF DIFFERENT METHODS

The advantages of a combined system of conduits are unquestionable, both from a point of cheapness of cost as well as economy of space.

The different methods of placing electric conductors underground have, from time to time, been gone over, and the advantages and disadvantages thereof thoroughly discussed, with the result that the so-called drawing in system of conduits has been universally adopted in this country, and it seems to meet all requirements considered from a financial and practical point of view.

Having determined in so far the most suitable system of underground conduit the most serious question for consideration remains, "How shall these conduits be placed?"

In all modern cities, the multiplicity of public service renders the demand for convenient space greater every year. The time is rapidly approaching when the area under the sidewalks in some of our larger cities must be utilized for public purpose. The indiscriminate granting of permits for space in the streets as well as under sidewalks should be restricted to reasonable and uniform limits. Especially should this apply to the granting of space for wire ducts.

WHO SHALL OWN AND OPERATE CONDUITS?

The experiences of Chicago and other large cities are evidence of the growing complications resulting from unsystematic and independent lines of subways constructed by numerous franchised companies.

The methods open for consideration are:

1. Municipal ownership of subways; 2. Requiring the electrical companies to build and maintain conduit for their wires.

Local conditions are a factor of considerable importance in deciding upon a course to adopt. For which reason the subject does not afford a ready treatment in general, but should be considered specifically.

In my investigation of the subject which course would be the most advantageous for the city of Omaha to adopt, several perplexing questions arose, one of which was the financial question, which in all contemplated undertakings is the pivot.

It is generally assumed that all public service conducted by private companies now should, by right, be conducted by the municipality. The advocates of municipal ownership assert that under municipal ownership the interests of the greatest number are best served; that absolute control is afforded, and revenue is created.

ARGUMENTS FOR AND AGAINST PUBLIC OWNERSHIP

Among the chief arguments in Omaha for municipal ownership of conduits were: That it would not prevent competition in the electrical field; That the city could obtain its street lighting at reduced cost; That rates for lighting, power and telephone service to private consumers would be reduced by competition; That the system would be a source of revenue, retaining, in addition, absolute control of its streets and alleys.

Considering these different points we find, that a municipal conduit system should provide reasonable capacity for future competition for lighting, power and telephone business.

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* City Electrician of Omaha, Neb., who read this paper before the sixth annual meeting of the International Association of Municipal Electricians, held at Niagara Falls, N. Y., September 2 to 4, 1901.

Under ordinary conditions, when building a conduit system, an increase in business of not less than 50 per cent. must be figured and space provided accordingly. But when such system is built by the municipality, space must be provided for possible future competition which means a system considerable in excess of actual requirements and an investment of capital in excess of what is necessary to comply with the demand.

This will lead to one of two things; either high charges for duct space or a non-paying investment.

If the charges for duct space are such as to cover the items of interest, depreciation, superintendence and maintenance against the unoccupied conduits, the burden of payment must fall upon the renter and the consumer; if, as may naturally be supposed, upon the consumer, then indirect taxation is imposed upon the community for a municipal experiment. On the other hand, if the system is not a success financially, direct taxation will be a consequence.

FAILURE OF COMPETITION

Should all the available conduit be occupied and the so much desired competition an assured fact, the conduits perhaps will bring the expected revenue. But will competition be the true regulative force for public service rates and obtain for the users the lowest possible price for the service rendered?

Competition generally has a depressing effect upon the investor, and compels a high interest upon capital.

It will necessitate a duplication of equipment and increase the cost of operating and maintenance. As the price for any kind of service in a great measure is dependent upon the cost of production, especially where the investment is large the items of interest, operation and maintenance must necessarily be reflected in the price paid by the public as well as private consumer.

The history of the effort to enjoy the fruits of competition is typical.

In almost every instance ordinances which created rival companies have led the way to eventual consolidation, the result being an over capitalized combination with too much stock and too many obligations to its stockholders to discharge properly its obligations to the public.

To prevent this condition, it is argued by some that the only solution is the enlargement of the function of municipalities, and the taking under public administration all business which requires the grant of any special right or privilege.

This means that the municipality shall operate all electric light plants, power plants, street railways, and telephones, etc., etc.

If all public service industries are operated by the municipality, public ownership of the wire conduits is a natural consequence and the question how to place them would be definitely settled.

But will municipal ownership do all things claimed for it by its advocates and provide the best obtainable service?

PUBLIC OPERATION NOT ALWAYS SUCCESSFUL

The history of municipal ownership, in so far as the electrical industries are concerned, is such as to not commend itself very strongly. In almost every instance where the municipality has installed a public lighting plant, figures are manipulated and the true cost of the product is never charged against the plant.

Political management of public service industries under present conditions cannot obtain that degree of efficiency and economy which is necessary to compete successfully with private management for the reason that political preferment in the transaction of municipal affairs and in filling positions will not be eliminated.

The only apparent benefit to be derived from the ownership of conduits by the municipality is control of the streets.

This can be gained by simpler arrangements without incurring a large initial expenditure, by requiring the electrical companies to build their own conduits in accordance with suitable conditions to be imposed by law.

CONTROL BETTER THAN OWNERSHIP

These conditions should be:

1. The location, form, material and construction of all conduits should be subject to the direction and inspection of the engineering and electrical departments of the city; all permits issued for the underground occupation of the streets and public thoroughfares should be revocable for cause.

2. The engineering department of the city should be authorized to locate these underground constructions whenever it is deemed best for the public interest, between the building lines of the streets.

3. Franchises for underground construction should be exclusive in order to prevent duplication of systems.

4. Franchises should be given in the form of a lease, imposing a direct charge upon all companies for the privilege of thus occupying the public streets.

5. The municipality should reserve the right to adjust rates to be charged for the different kinds of services periodically, the rates to be based upon cost of production plus a reasonable profit.

6. The rates for service furnished by public service industries should be adjusted by a special non-partisan commission with powers delegated to investigate all matters pertaining to the subject.

7. The municipality should have the right to acquire possession at an appraised value of such work in the future.

It appears that with such regulations the interest of all would be served, not imposing unreasonable and unjust restrictions upon anyone and without the destruction of invested private capital.

CONCLUSIONS

The following conclusions may be drawn

1st. That a combined system of conduit from a municipal standpoint is the best method to adopt for reasons of economy of space.

2nd. That competition in the electrical industries will have a tendency of increasing the amount of underground and overhead construction, increasing thereby the hazard manifold without any apparent benefit to the public.

3rd. That municipal ownership offers no advantages which cannot be obtained under private management subject to municipal regulations.

4th. That under municipal control of public service industries all that which is claimed for municipal ownership can be attained without incurring large investments of money and probable financial failure of same.

FIRE AND POLICE ITEMS

GOOD SERVICE.—During the last year the number of fires that occurred in Portland, Ore., amounted to 151, with a total loss of $73,809.93. The per capita loss was $0.72. Six years ago the annual loss was nearly $900,000, but it has been gradually decreasing, keeping pace with the increasing efficiency of the fire department.

IRISH CRIMINAL STATISTICS.—The number of indictable offences in Ireland has fallen from 9,144 in 1899, to 8,072 in 1900. In 1898 they amounted to 9,988, so that the substantial decrease of 10 per cent. has taken place in two years. For non-indictable offences there was a decrease of 25,865 from the preceding year. On the other hand cases of drunkenness have materially increased, nearly 100,000 occurring during the year. The ratio of drunkenness to the population was 2,449 per 100,000 in the large towns, and 2,119 per 100,000 in the rest of Ireland.

MONUMENT FOR VOLUNTEER FIREMEN.—In memory of the volunteer firemen a fine monument has been erected in Forest Lawn Cemetery, Buffalo, N. Y. The base and pedestal are of granite and the whole is surmounted with a heroic figure of a fireman in bronze.

THE OLDEST FIRE COMPANY in the United States was organized July 11, 1752. It was formed in the village of Bridgeton, Burlington county, N. J., and was named the "Britannica." Ladders and leathern buckets were the apparatus first in use and several of the latter are still preserved. Its first engine was purchased in 1765, in London, for the large sum of $170. To-day the company is thoroughly up-to-date in every way. In 1787 the name of the company was changed to that of the "Mount Holly Fire Company," and in 1805 the name was again changed to the "Relief Fire Company of Mount Holly," the name that it still bears.

MEETING OF MUNICIPAL ELECTRICIANS

NIAGARA FALLS, N. Y., September 2-4, was the scene of the sixth annual meeting of the International Association of Municipal Electricians, nearly 150 members being present. Mayor M. B. Butler, of Niagara Falls, delivered the address of welcome. He pointed out the fitness of holding the convention there, where there was such a development of power. He explained many interesting features of the power development, and stated that Niagara would soon have 200,000 developed horse-power. In conclusion he offered the freedom of the city to the members. Captain William Brophy replied to the mayor's address, and, after Mr. M. J. Donohue, chairman of the executive committee, had made a brief speech, President Morris W. Mead delivered his address. He said the key-note of the association was its desire to accomplish electrical progress. He urged upon the delegates the necessity of prompt attendance at the convention to secure its success.

W. M. Petty, superintendent of telegraph of the fire department of Rutherford, N. J., read a paper on "The Protection of Fire and Police Telegraph Wires from High Tension Currents and Lighting." He described his experience with lighting, and claimed that larger fuses than are ordinarily used should be employed. The "sneak" currents are what really cause the most trouble, and these are what should be especially guarded against. In the ensuing discussion there was a decided difference of opinion as to the best place to insert lightning arresters in the line.

At the session held on September 3, Mr. H. W. Pope, general manager of the Buffalo Telephone Company, made a fine address on the subject of "Telephones as Applied to Municipal Affairs." He was followed by Mr. F. F. Schurig, of Omaha, who presented a paper entitled "Municipal Control vs. Municipal Ownership." In addition to these papers, Captain William Brophy, of Boston, Mass., read a paper on "The Inadvisability of Placing High and Low Potential Wires Through the Same Series of Conduits or Through the Same Manholes." Papers on special topics were also presented.

At the last session held on the morning of the 4th, the reports of the secretary, treasurer and nominating committee were received. After some unfinished and general business was transacted, the election of officers was held. The choice for president fell upon A. C. Hatch, of Detroit, Mich.; W. M. Petty, of Rutherford, N. J., was elected first vice-president; William Crane, Erie, Pa., second vice-president; A. C. Fanard, Atlantic City, N. J., third vice-president, and William A. Barnes, Bridgeport, Conn., fourth vice-president. The secretary and treasurer are, respectively, Frank P. Foster, of Corning, N. Y., and Adam Bosch, of Newark, N. J. W. H. Thompson, Richmond, Va., will be chairman of the executive committee, and M. J. Donohue, Niagara Falls, N. Y., chairman of the committee on finance.

Grand Rapids, Mich., and Richmond, Va., both desired to have the honor of the convention of 1902, but the latter was finally selected.

FIRE AND POLICE ITEMS

ELGIN FIREMEN LIKE SAUSAGE.—The last report from the city clerk's office of the city of Elgin, Ill., contains among other items charged to the firemen's account, two bills for sausages of $4.89 and $69.50 respectively. The only other item for food is for coffee and bread, so it would appear that the force had rather an unvaried diet.

NEW RULE FOR WASHINGTON POLICE.—Major Slyvester, Superintendent of the Washington (D. C.) police, has issued strict orders forbidding the officers wearing their helmets on the back of their heads and putting their feet on the dashboards of the cars upon which they happen to be riding. Such acts are characterized as unseemly and tending to bring the force into contempt.

PARTICULAR ATLANTA POLICEMEN.—The police of Atlanta, Ga., have added another offence to those on the calendar. The other day a young man was arrested for "braying like a mule," when told to "move on," and had to pay $3.75 fine—probably for his poor imitation.

ELLETT OF ELMIRA VINDICATED.—Judge Parker of the Appellate Division of the New York Supreme Court has reversed the decision of the Fire Commissioners of the city of Elmira, N. Y., who dismissed from the department Will Y. Ellett, Superintendent of the Fire Alarm Telegraph. He was accused of being intoxicated while on duty and, at the hearing before the commissioners, was not allowed to be represented by counsel. It was upon this ground that the Court held that the commissioners acted in an illegal manner and ordered that the appellant be reinstated in his position. It is doubtful if Mr. Ellett will return as the Postal Telegraph Company, at Binghamton, have appointed him to an equally lucrative position in their service.

"THE FIRE-LADDIE PRINCESS."—The firemen of the United States will soon be visited by the Princess Marie, wife of Prince Waldemar of Denmark. The Princess is passionately devoted to the subject of fire fighting and is known as the "Fire-laddie Princess." Whenever a fire breaks out at Copenhagen, she is notified secretly, as her father and husband do not sympathize with her in her hobby. She always appears on horseback, encouraging and helping to direct the men. She also carries messages from one end of the line to the other. One day she dressed up in a complete suit of a fireman, trousers and all, and visited the court photographer to have her picture taken. The photographer at first refused to take it, but yielded to the Princess' orders. Two hundred of the photographs were framed and sent to the fire companies of Denmark without the knowledge of the King or Prince.

CANNON FOR FIRE SERVICE.—William H. Musham, Chief of the Fire Department of Chicago, may soon ask that his department be furnished with a few six-inch guns for service in case of fires in the large oil tanks. By means of the cannon holes could be made in the tanks and the oil would then run out, an explosion being averted. In places where the slope of the ground allowed the burning oil to escape, holes were often made with cannon balls and no explosion has been possible.

SMALL FIRE LOSS IN EUROPEAN CITIES.—The fire losses in European cities are about one-tenth those that occur in the cities of the United States. It is not that the fire departments are so much more efficient than those here, but the houses are built on plans that render them almost fire-proof. The fire departments are in many cases in the European cities very insignificant and seemingly inadequate for the needs of the large cities, but experience shows that more elaborate fire fighting forces are not necessary. Thus the city of Venice, with a population of nearly 200,000, has an annual loss of about $20,000. The 500,000 people that make up the population of Milan lose on the average $150,000. Budapest, which has a larger population than the city of Boston, Mass., loses but one-tenth the amount yearly lost in the latter city. The large city of Paris, of two and one-half millions of inhabitants, has had a fire loss for a number of years very near to that of Boston. In 1898 it was less than a million dollars.

FIRE STATISTICS FROM THIRTEEN CITIES.—The following table gives a comparative statement of the fire departments in thirteen cities:

CITIES.	Population.	Engine Companies.	Hose Companies.	H. and L. Companies.	Chemical Companies.	Steam Engines.	H. & L. Trucks.	Chemicals.	Hose Wagon.	OFFICERS AND MEN. Permanent.	Call.	Total.
						Including Reserves.						
Newark, N. J.	230,000	16	..	5	3	16	5	3	15	196	...	196
Jersey City, N. J.	200,000	14	..	5	2	14	6	2	16	101	152	253
Indianapolis, Ind.	170,000	9	9	4	3	9	4	3	19	152	...	152
Toledo, O.	130,000	6	11	4	3	6	4	7	12	105	...	105
Columbus, O.	125,000	12	..	5	2	12	5	2	12	147	...	147
Syracuse, N. Y.	124,000	7	..	2	1	8	3	2	9	91	...	91
Paterson, N. J.	105,000	9	..	3	1	9	3	1	9	98	...	98
Richmond, Va.	100,000	8	..	3	1	10	4	1	9	69	63	132
Atlanta, Ga.	100,000	2	8	3	2	3	3	2	9	106	...	106
Albany, N. Y.	100,000	10	..	3	3	12	4	3	16	123	64	187
Worcester, Mass.	100,000	6	8	3	3	6	8	3	3	87	98	185
New Haven, Conn.	100,000	8	..	3	..	9	4	1	9	101	34	135
Lowell, Mass.	90,000	6	5	4	..	6	4	2	12	74	101	175

MUNICIPAL MATTERS DETERMINED IN COURT

City Cannot Establsh Water Rates—Labor Ordinance Unconstitutional—Cannot Close Pool Rooms—Cannot Collect Licenses—Hospital Irresponsible for Bad Nursing

WHEN PUBLISHED NOTICES ARE ILLEGAL

THE Supreme Court of Iowa has held that the term "a newspaper of general circulation" does not refer to an extra edition of a paper published at night having a comparatively small number of copies in circulation. Where an ordinance is published in such a paper it does not meet the requirements of the statute.

LABOR ORDINANCE UNCONSTITUTIONAL

IN Illinois recently it has been held that any ordinance requiring union labor only on city work and that laborers shall work only eight hours a day is unconstitutional as a violation of the fredom of contract and a discrimination between classes of citizens; as a restriction upon competition and as increasing the cost of work.

NOT A PASSENGER AFTER ALIGHTING FROM CAR

A DECISION has been recently rendered in Tennessee to the effect that, after a passenger alights from a street car and goes behind it to a parallel track, he has ceased to be entitled to the protection due a passenger and is considered to be only a traveller on a highway, and if struck by another car, cannot claim damages as a passenger.

SCHEDULE TIME NOT ALWAYS NECESSARY

WHEN a railroad agrees to run cars every half-hour and does not do so on account of unusually heavy snow falls and winds that render it impossible to run cars some of the time both on this road and on others in the vicinity, the failure to keep the agreement does not justify a recission of a contract for land, the transfer of which was dependent upon this condition of car schedule.

CITY CANNOT ESTABLISH WATER RATES

IT has been decided that the city of Scranton, Pa., cannot establish rates for water and compel a water company to abide by them. The city refused to pay the bill rendered by the company, but offered to pay a sum equal to that which would be charged if the rates established by the ordinance fixing the prices were in force. The company threatened to shut off the supply of water and, upon the city seeking to enjoin the company from so doing, demurred to the bill in equity and was sustained by the Court.

MUST PAY COST OF SAFETY APPLIANCES

THE Michigan Supreme Court has held that the State Railroad Commissioner has the power to order gates, derailing switches, etc., to be operated by a tower man, to be placed on a railroad crossing on a city street, and that the cost of construction and maintenance be borne by the companies whose lines cross. One of the companies had contended that, inasmuch as its lines were in operation before the other road was built, it could not be called upon to pay for any expense made necessary after its lines were built and for which it was in no way responsible.

AUTHORITY OF STATE RAILROAD COMMISSIONER

THE Supreme Court of the State of Michigan denied the application of the city of Jackson and a traction company for a writ of mandamus requiring the State Commissioner of Railroads to set aside an order to have a crossing made by means of a bridge, instead of a crossing at grade, on the ground that control of the streets was vested in the city by charter. The Court held that the police power of the State in cases of this nature is superior to any local authority nor can this power be restricted or hampered by any action of the City Council or any provision in the charter of the city.

CONTRIBUTORY NEGLIGENCE

IN the case where a woman turned suddenly at the word of a friend when crossing a foot bridge and walked off the side of the bridge where there was no railing, the judgment of the Lewis County Trial Term of the New York Supreme Court in favor of the woman has been reversed by the Appellate Division on the ground that the respondent was contributorily negligent. The higher court held that "while a traveller passing along the sidewalk can ordinarily indulge the presumption that the way is reasonably safe, the rule does not obtain where the dangerous condition is obvious and known to the wayfarer."

MUST AWARD CONTRACT TO LOWEST BIDDER

ONE of the laws of Massachusetts, chapter 415, provides that the supplies of the city of Lowell shall be purchased by the heads of the department of supplies subject to the approval of the Mayor, and that "neither the City Council or either branch thereof, nor any committee or members thereof, shall directly or indirectly take part in the purchase of material," with certain exceptions not pertinent to the case before the court, "nor shall they, or either of them, take part in the making of contracts." In conformity with this law, an ordinance of the Common Council has been declared illegal. The ordinance awarded a contract to a company not the lowest bidder, but one using a union label. Suit was brought to enjoin the payment of the money for the work and the Supreme Court established the illegality of the ordinance.

CANNOT CLOSE POOLROOMS

JUDGE BUCKLEY, of the Police Court of the city of Louisville, Ky., has decided that the General Council of that city has exceeded its powers in passing an ordinance to prevent the operation of poolrooms. The Court bases its decision on section 2782 of the Kentucky Statutes which states that "the General Council shall have power to pass ordinances imposing fines not exceeding $100 for any designated misdemeanor not provided for by the general laws of the Commonwealth."

The Court states that under the common law in force in Kentucky there is a complete remedy for the suppression of pool-rooms and the punishment of those conducting them. When the charter of the city was enacted by the Legislature, jurisdiction on this matter was left to the Circuit Court alone and denied to the General Council of cities of the first class the authority to pass ordinances imposing fines upon this class of misdemeanors.

MECHANIC'S LINE

THE New York Court of Appeals has decided that, in accordance with Section 15 of the New York Lien Law of 1897 the provisions apply to public as well as private persons and that a contractor, by giving an order on a fund to accrue from the performance of a public contract, neither assigns, sublets, nor disposes of the contract, nor his power to execute the same, does not thereby violate the provisions of the law prohibiting such assignment, subletting or disposal without the previous consent of the official awarding the same. The provisions of the said section 15 are as follows, "no assignment of a contract for the performance of labor or the furnishing of materials for the improvement of real property or of the money or any part thereof due or to become due therefor, nor an order drawn by a contractor or sub-contractor upon the owners of such real property for the payment of such money, shall be valid until the contract or statement containing the substance thereof and such assignment, or a copy of each or of such order, shall be filed in the office of the county clerk of the county wherein the real property improved or to be improved is situated."

RESPONSIBILITY FOR BAD NURSING

THE United States Circuit Court of Appeals in Massachusetts held that a patient in a public hospital, chartered as a charitable institution, although privately managed, cannot recover for injuries due to the negligence of a nurse employed in the institution when due care has been used in selecting the nurse. The Court decides that the institution is exempt from liability because the patient accepted the corporation's bounty and thus formed an implied agreement to exonerate it from blame that might be due from an act of its servants in administrating charity. The fact that the hospital received a pecuniary consideration from the patient does not affect its character as a charitable institution.

CANNOT COLLECT LICENSES

THE Supreme Court of California has decided that the territory of a city organized within a county is withdrawn from the jurisdiction of the board of supervisors of said county, and that within municipalities a board of supervisors has no powers to impose a license fee or tax for the sale of liquors. In effect, the city takes precedence over the county with reference to the collection of licenses for business taking place therein, and but one license shall be paid—that to the city. In the particular case under contention, that of the county of Sacramento, the said county will lose, not only the revenue derived from the sale of liquors, but also that from theatres, bankers, peddlers, pawnbrokers, etc.

CURRENT LITERATURE ON MUNICIPAL TOPICS

Reviews of Some Important Books—What the Magazines and Reviews Have to Say About Civic Affairs—Municipal Reports Received

Rider's Little Engineer is the Vade Mecum of the civil engineer and the heads of all departments as well as the practical man employed about municipal plants. It is made in a convenient size for the pocket, bound durably and handsomely in black leather. It contains a mine of information upon engineering and other subjects, which is so thoroughly indexed as to afford instant answers to the thousand and one questions which arise almost daily. It contains 500 pages, 250 of which are devoted to valuable tables, each one of which contains a volume of information itself. For example, "Table No. 120" shows the loss of head and pressure and discharging capacity for different velocities for cast iron pipe lines, where the pipe is 48 inches in diameter. Every conceivable subject which is related to the construction or maintenance of a municipality is touched up, so that the "Little Engineer" is a library in miniature. It is published and sold by the author, Joseph B. Rider, of South Norwalk, Conn., at $3 per copy.

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A. B. C. OF THE TELEPHONE. By J. E. Homans. 350 pages. Price $1, postpaid. Published by Theo. Audel & Co., 63 Fifth avenue, New York.

This little book has just been published and is a practical and thoroughly up-to-date treatise on the subject of telephony. Enough theory is given to supplement the practical instructions and render them perfectly understood. Definitions and apparatus are briefly but clearly defined so that the beginner may grasp the essential elements of the subject without being compelled to wade through pages of mathematical deducations which would not be understood and only serve to confuse him. There are chapters on the principles of sound, electricity and electrical quantities; a short history of the speaking telephone, and good descriptions of improved appliances and discussions of the various systems in use in regular service. In fact it tells how telephones are made, installed and operated. Over 250 illustrations render perfectly clear any ambiguity that might arise in the mind of a reader.

* * *

The best means of securing the health of a community is always a subject that the sanitary authorities of a city or town are discussing, and as new conditions are continually arising, new methods must be devised to meet them. *Water and Water Supplies*, by John C. Thresh, M. D., D. Sc., is the title of a little book the main object of which is to place within the reach of those interested in the public health information and data that will enable them to decide whether their supply of water is pure, and if not, how it may be made so at reasonable cost. While it is not treated from a strictly technical, engineering basis, yet all necessary details are given so that the matter may be studied intelligently. The element of water is treated from all standpoints, its composition, properties, rain water, surface and subsoil water. Besides the general statements, the subject is taken up in detail and the water supplies of different places are described showing their good and bad qualities and the reasons they are as they are. Analyses of waters are given and the proper way that these should be interpretated. The pollution of drink water, self-purification of rivers and how water may be purified both on a large and small scale are all clearly set forth. A chapter is devoted to the laws relating to water supplies, giving the rights of riparian owners, who shall bear the cost of water works, important legal decisions affecting water supplies, etc. In all the book is a valuable addition to the libraries of health officials and of all who have the best interests of the health of the community at heart. Published by P. Blakiston's Son & Co., 1012 Walnut street, Philadelphia, Pa. 438 pages. Price $2.

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THE CIVIL SERVICE LAW OF THE STATE OF NEW YORK. By William M. Collier, President of the New York Civil Service Commission. Matthew Bender, Albany, N. Y. 440 pages. Law buckram, $4.50.

This is a treatise on the law relating to the appointments to office, removals from and tenure in office, as embodied in the New York Civil Service and the "Veteran" laws. Citations are given to all cases that have been decided in New York with numerous references to decisions in other states and by the Federal courts. The rules and regulations of the State Commission are given and also forms of many of the proceedings that are frequently arising under the Civil Service Law. As these are based upon pleadings that have been already decided, they can be relied upon as precedents. Public officials, as well as lawyers, who are continually compelled to apply and enforce the provisions of this law, will find this volume of the greatest assistance to them in properly interpreting it. There is an index to forms and the large general index will enable one to quickly find the provisions of the law on any subject. In addition is given a table of cases cited in the text with the subsequent New York cases that affect in any way the one under consideration.

* * *

THE GAS WORKS DIRECTORY AND STATISTICS, 1900-1. (Revised to August, 1900.) London: Hazell, Watson & Winey, Ltd., 1 Creed Lane, E. C.

This is the twenty-fourth issue of this valuable directory. The latest returns that could be secured have been included in it and, as the matter comes directly from officials in charge of the different lighting stations, they may be relied upon as accurate. This year the Electrical Section, usually incorporated in the volume with the gas statistics, is published separately, because of its increased size, filling 350 pages. A complete alphabetical list is given of the officials of the gas plants and of the associations of engineers and managers. The book is divided into three sections, dealing respectively with the plants in England, Scotland and Ireland.

* * *

Directory and Statistics of Electric-Lighting and Traction Works is the title of the electrical section referred to above and forms a volume equal in size to the gas directory. It is edited by C. S. Vesey Brown, Assoc. Mem. Inst. C. E., Electrical Engineer, City of London Corporation. This volume gives the data of all the works that are in operation or projected in Great Britain and Ireland and a list of tramways operated by steam, mechanical or horse traction that are authorized under acts of Parliament.

Francis Olcott Allen, 1539 Pine street, Philadelphia, Pa., has nearly completed his work on the *History of Enfield, Connecticut.* Two the three volumes have been completed, and each will contain about one thousand pages. The edition is to be sold by subscription only, and but 250 copies will be printed, the price being $5 per volume. Volume I has been received and from it one may judge of the immense amount of work Mr. Allen has undertaken. Few are the towns in the United States of the size of Enfield or larger that have had a history such as this written about them. It is about as complete as it would be possible to make it and great credit is due its author for the painstaking care that he has given to the work.

Volume I is a compilation from all the public records of the town that are known to exist, covering the period of its first settlement in 1676 to 1850. Practically everything that has taken place in the town of sufficient importance to be recorded is mentioned in this book. Being a documentary history, the written records of the town are left to tell the story unbiased by any personal opinion of the author, which all too often so colors the preparation of histories that even the facts that are given in them are so arranged that wrong impressions are conveyed. The truth is told, but not the whole truth. Mr. Allen's work is a happy exception to this historical tendency. So complete has been the work of its author that the Town Clerk of Enfield has decided to lock away all the old records for safe keeping and in their place substitute this history. Surely that speaks well for the accuracy of the work.

The introduction to the work in the first volume contains a "Historical Sketch of the Town of Enfield, by John Chauncey Pease, M. D., 1829." This is rather a long "sketch" by this worthy gentleman, but it is given in full and is as nearly as possible a fac-simile of the spelling, punctuation and quaint genealogical tables of the original. Following the introduction are "Transcriptions from the Committee Book." This contains the acts and grants of the committee from 1679 to 1692. At the latter date the town took control of affairs. The records of the town meetings occupy fully one-third of the volume and are given as completely as the battered conditions of the old record books would admit. The original spelling has been preserved and the pages upon the different entries where made are given. In many of the older books it was possible to decipher only portions of sentences, but these are religiously reproduced. The records of these meetings are given in this volume up to the year 1850.

The author then returns to the year 1717 to give the entries in the "Commoners Book A." In this are the records of the surveyor and the dimensions of all the lands that were surveyed and laid out.

The town of Enfield was colonized chiefly from Salem and the pioneers must have been a hardy lot to judge from the many privations they had to endure. Notwithstanding all, they prospered and their lands continually rose in value. This was especially noticeable after the industry of distilling was introduced. Much valuable information as to the prices of commodities and the quaint ideas of the way to govern towns that prevailed in those days in Connecticut may be drawn from these pages. It is always much more satisfactory for a student to form his own conclusions regarding the conditions obtaining at any period than to be compelled to accept the ideas of a historian, no matter how famous. It is for such that works of this kind are valuable. Here are the facts as written by those who had a hand in their making; let those who wish study them for themselves. If an author, such as Parkman, should take these volumes and write from them a narrative history, the town of Enfield would no doubt be found as interesting as any in New England.

This work has been well done, although it is intended for a select few. The author's work has been done conscientiously and no attempt has been made to cover up any events that would detract from the credit of the town.

The remaining volumes of this work will include records of deeds, courts, marriages and births, etc., all given in the smallest details To the majority these facts are dry, but they are an indelible picture of old times in Connecticut and, by inference, in New England such as would be hard to find elsewhere. Mr. Allen is to be congratulated on the success that has attended the large amount of time and money that he has expended on this work of love and grateful remembrance of the home and state of his ancestors.

FOREIGN PERIODICALS

"Boss" Croker. Gustavus Myers in the *National Review.* London, September, 1901. Price per year, 2s. 6d.

The Charity Organization Review for July, 1901, contains an article on *The Housing of the Working Classes.* This article, of about 4,000 words, deals mainly with the efforts that have been made to better the working class in England. The August number has an article called *An Experiment in Workingmen's Dwellings.* It is a detailed account of the erection of thirty-one houses by the Duke of Northumberland. London, Eng. Price per year, 7s. 6.; 6d. per copy.

The Engineering Times, London, Eng., for August, contains an article of about 3,600 words by Douglas Archibald on *An Ideal Disposal of Sewage.* It shows the failures, and their remedies, of the chemical treatment of sewage and is illustrated with tables. W. Doman presents his third paper on *The Production and Use of Acetylene Gas.* It treats of the production of the gas and has cuts showing the apparatus used in its manufacture. Notices of the exhibits at the *Glasgow International Exhibition, 1901,* are also included in this number.

Glasgow Electric Tramways. The Electrical Review, London, Eng., August 30, 1901. Prices per year, 19s. 6d.; per copy, 4d.

AMERICAN PERIODICALS

Engineering Problems in Cement Manufacture. A paper on the processes of cement manufacture by Prof. S. B. Newberry read before the Western Society of Engineers. *Journal of the Western Society of Engineers,* June, 1901.

Modern Methods of Distributing Gas. An article of some 3,000 words by Norton H. Humphrys in *American Gas Light Journal,* New York, September 9, 1901. $3 per year.

Some Phases of River Pollution. H. B. Bashore, M. D., in the *Sanitarian,* Brooklyn, N. Y., September, 1901. Price $4 a year; 35 cents a copy.

Duty of the Citizen in Relation to Public Charities. Excerpts from an address delivered in New York City, 1891, by Grover Cleveland. *Charities,* New York, September 7, 1901. Price, $2 a year; 25 cents a copy.

The Cosmopolitan for September contains an article by its editor on *The City of the Future—A Prophecy. Acetylene Gas,* a short account of the methods of manufacture and the requirements for a good stationary generator for house lighting. Orvington, N. Y. Price, $1 a year; 10 cents a copy.

California's Great Cycle-Way. T. D. Denham writes of this strange and interesting link that connects Pasedena and Los Angeles in *Pearson's Magazine* for September. New York. Price, $1 a year; 10 cents a copy.

The Utility, Peculiarities and Special Needs of Hospitals for Children. A plea for separate hospitals for the treatment of children, by William Wallace Ord, M. D., in the *National Hospital Record* for September. Detroit, Mich. Price, $1 a year. *A City Isolation Hospital,* an article by Salona Holmes, M. D., read before the Massachusetts Association of Boards of Health, also appears in this number of the *Record.*

The Control of High Potential Systems of Large Power, a paper read by E. W. Rice, Jr., at the meeting of the American Institute of Electrical Engineers at Buffalo, N. Y. A technical article dealing with the various forms of electrical switches in the *American Gas Light Journal,* New York, September 16, 1901. Price, $3 a year.

The Electrical Review contains an interesting account of the *Combined Railway and Lighting System in Switzerland,* by Enrico Bignami. *The Chambly-Montreal Power Transmission* is described in another article telling how the power is brought to Montreal from the Richelieu River, seventeen miles away. New York, September 14, 1901. Price, 10 cents a copy; $3 a year.

The June issue of *Municipal Affairs,* just come to hand, has an article of some nine pages on the *Growth of the Cities of the United States,* by Adna F. Weber, drawing some inferences of the urban growth from the data of cities of 25,000 and over. He states that the growth has been less rapid in the last decade than in the preced-

ing one and tries to show the causes of decrease. Hiram B. Loomis writes of the *Franchise Taxation in Illinois,* discussing the taxation of companies that hold franchises under the state law. *Valuation of City Real Estate for Taxation* is the subject of an article by W. A. Somers. He shows the difficulties encountered in getting at the true values and suggests a scheme to solve the problem, taking into consideration the different characters of the lots and the improvements made on them. Clinton Rogers Woodruff scores the methods in vogue in Pennsylvania in franchise regulation in a short article on the *Recent Street Railway Legislation in Pennsylvania and Philadelphia. Boston's New Subway* and *New York's Subway Policy* are two articles by Willard Winslow and William J. Gaynor respectively. The committee appointed by the Civic Federation of Chicago issues its long report of its investigation into the financial condition of the *Street Railways of Chicago.* The article on "Municipalities and Vice," which appeared in the December issue, has been answered anonymously in this number by a woman, whose article consists, mainly, of a number of extracts from other writers. Her argument for the incorporation of morality in any legislation on the restrictions of prostitution has been, on the whole, well substantiated.

The Annals of the American Society of Political and Social Science for September contains, among its notes on municipal government, short statements concerning the cities of *Montreal, Can.; Havana, Cuba,* and *Denver, Col.,* relative to the organization, framework, etc. Philadelphia, Pa. Price, $6 a year; $1 per number.

The Progressive Age for September 16 prints some extracts of a paper read by Arthur Allen before the Society of Engineers on the *Concrete Subways for Underground Pipes,* giving the particulars of those employed in the cities of London, Nottingham and St. Helens.

The Outlook for September 21 contains an article of some 3,000 words on *Philadelphia's Republican Tammany,* by Clinton Rogers Woodruff, in which he contrasts the city government of Philadelphia with that of New York, showing that the corruption in the one city is equal to that of the other.

The Single Tax as a Happy Medium. An article of 2,000 words by W. A. Hawley in *The Arena,* September, 1901. New York. Price, $2.50 a year; 25 cents a copy.

The Coffee House Plan. Arthur Lawrence Sweetser attempts to show how the coffee house can be made to offset the saloon as the workingman's club. *Gunton's Magazine,* New York, September, 1901. Price, $2 a year; 20 cents a copy.

Rise of the American City. The wonderful story of the 1900 census by Walter Wellman in *McClure's Magazine,* New York, September, 1901. Price, $1 a year; 10 cents a copy.

What the Cities Are Doing for the Children of the Poor. The ways in which different charitable organizations are striving to make the lives of the poor children brighter. Charles Loring Bruce in *The New England Magazine.* Boston, September, 1901. Price per year, $3; 25 cents a copy.

The City at Night. A picture of the city after the day's work is done. Rollin Lynde Hartt in the *Atlantic Monthly.* Boston, September, 1901. Price, $4 a year; 35 cents a copy.

The Forum has a contribution from Prof. Peter T. Austen on the *Utilization of Waste.* The author tells of the many useful articles that can be obtained from the waste of a city. He pays especial attention to the economic disposal of sawdust. *A Model Factory Town* forms the subject for an article by Mrs. Leonora Beck Ellis about the town of Pelzer, S. C. The president of Clarke University, G. Stanley Hall, writes on *The Ideal School as Based on Child Study.* He holds that the modern teacher must know more and teach more; he must not be a mere giverout and hearer of lessons. New York, September, 1901. Price, $3 a year; 35 cents a copy.

In *The Century* for September, 1901, Cleveland Moffett has an article on *New York's Mid-Air Clubs.* He tells of the delights of dining way above the city streets with the extensive view of the surrounding city and harbor. David Gray, in an article, *The City of Light,* describes the effect that is produced when the lights are turned on at nightfall at the Pan-American Exposition. New York. Price, $4 a year; 35 cents a copy.

Fire Protection of Cities. Insurance Engineering, August, 1901.

The Progress and Tendency of Hygiene and Sanitary Science in the Nineteenth Century. Article of twenty-four pages. by Prof. George M. Kober, M. D. *The Sanitarian,* Brooklyn, N. Y., August 1901. Price $4 a year; 35 cents a copy.

Infectious Diseases Spread Through the Milk Supply; Milk Adulteration in Germany. The Sanitarian, August, 1901.

Abandoned Farms as Homes for Unemployed and City's Poor. Article by Clarence E. Blake in *New England Magazine.* Boston, August, 1901. Price $3 a year; 25 cents a number.

Attempted Evasion of the New Tenement House Law. Charities, New York, July 27, 1901.

Midsummer in New York. Mrs. Schuyler Van Rensselaer in *The Century.* New York, August, 1901. Price $4 a year; 35 cents a copy.

Utilitarian Principles of Taxation and Their Relation to Altruism. R. S. Guernsey in *The Sanitarian.* Brooklyn, N. Y., August, 1901. Price $4 a year; 35 cents a copy.

Mosquitoes as Transmitters of Disease. L. O. Howard in *The American Review of Reviews.* New York, August, 1901. Price $2.50 a year; 25 cents a copy.

MUNICIPAL REPORTS

THE following annual reports have been received since our last issue: Allentown, Pa., for 1900; North Adams, Mass., for 1900; Montgomery, Ala., for 1900.

Hon. John O. Hall, mayor of Quincy, Mass., sent us his annual address for the year 1901.

Reports from boards of water works have come to hand as follows: Fort Worth, Tex., for the year ending March 21, 1901; Altoona, Pa., 1900-1901; St. Louis, Mo., for the fiscal year ending April, 1901; Marion, Ohio, for 1900.

Of reports from departments of health the following have been sent to us: Haverhill, Mass., for 1900; McKeesport, Pa., 1900; twenty-seventh annual report of the Secretary of the State Board of Health of Michigan, 1900.

Other reports on several different departments, sent to us, are: Report of the Department of Public Works of Yonkers, N. Y., for 1899 and 1900; report of the Assessing Department, Boston, Mass., for 1900; annual statement of receipts and expenditures, Wheeling, W. Va., for 1900; report of the Superintendent of Highways, Haverhill, Mass., for 1900; report of the Chief of Police of Wilmington, Del., for the fiscal year ending June 30, 1901; semi-annual report of the Public Lighting Commission, Detroit, Mich., for the half year ending December 31, 1900.

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MUNICIPAL BOND SALES FOR SEPTEMBER

Large Cities Sell on Declining Scale—New York's 3½ Per Cents Sell at Lowest Price on Record—Speculation Causes Low Rates—Better Prices at End of Year

SEVERAL of the large cities have been disposing of their bonds on a declining scale since the first of January of this year. Montreal, Canada, had a hard time to dispose of its bonds along the first of the year. Philadelphia received a black eye when she offered her water improvement bonds for sale, receiving only one bid of $5,000 for $9,000,000 worth offered, and afterwards being obliged to sell them at as slight a premium as 3½ per cent. New York City has not escaped the general slump among the larger cities, and shows a decided falling off in the sale of her municipals, so far as price is concerned, since the first of the year. The recent sale of $3,000,000 of 3½ per cents. was the lowest on record for local consolidated stock, the basis being 3.35 per cent.

A well known Wall street broker in municipals is reported as saying, that the activity of speculation is, in a measure, responsible for the downward tendency observed in investment securities. Many customers are out of the bond market because their funds are tied up in speculative pools. Nevertheless he believes that there will be a decided change for the better in the course of a few months, because these parties are sure to win out in their schemes and bonds are sure to be sold at much larger profit before long.

On the other hand, while there has been a depression of the municipal bond sales in the leading money centres, the price of bond sales in the smaller cities and even in the towns and villages has been rising. These communities have not been affected by the purely local conditions which have existed only in cities like New York and Philadelphia.

Notwithstanding there has been a depressed market as to price paid the aggregate amount continues to grow and the grand totals at the end of this year, unless there comes an unexpected slump, will be the greatest ever known.

PURCHASER.	PURCHASE.	INT. RATE.	TERM YEARS.	AMOUNT.	PRICE.
Bioren & Co., Philadelphia	Chester, N. J., Sewer, gold	4 per cent. s. a.	15	$73,000	103.109
First National Bank, Local	Bowling Green, O., Street Improvement	4 per cent. s. a.	1½—11 Ser.	40,000	101.388
Hannibal, W. H	Paris, Mo., Water and Electric Light	5 per cent. s. a.	12½ Avg.	20,000	109.400
Heywood, Geo.	Bristol, Va., Street Improvement	5 per cent. s. a.	20—30 Opt.	10,000	101.375
Kane & Co., Minneapolis	Hillsboro, N. D., Sewer Improvement	5 per cent. a.	16 1-3 Avg.	5,550	100.250
Kane & Co., Minneapolis	Morton, Minn., Water Works	5 per cent. s. a.	3—10 Ser.	8,000	101.312
McCurdy, R., Local	Youngstown, O., Wick Av., Cent'l Sq., etc. Sewer	5 per cent. s. a.	1—5 Ser.	6,275	104.350
Noble, H. E., Local	Portland, Ore., Improvement, gold	6 per cent. s. a.	10	30,000	102.100
Stoddard, Nye & Co., Minneapolis	Alexandria, Minn., Storm Water Sewer	4½ per cent. s. a	5	6,000	100.525
Shute, J. W., Local	Hillsboro, Ore., Water and Light	5 per cent.	10	24,500	Par.
Mason, Lewis & Co., Chicago	Erie, Pa., Paving	4 per cent.	10—20 Opt.	70,000	105.250
Skaneatles Savings Bank	Marathon, N. Y., School	4 per cent.	8	4,000	101.480
Stein, M. A., & Co., New York	Springfield, Mass., School	3½ per cent.	20	114,000	
Stein, M. A., & Co., New York	Springfield, Mass., Fire	3½ per cent.	10	40,000	104.650
Stein, M. A., & Co., New York	Springfield, Mass., Sewer	3½ per cent.	25	25,000	
Harris, N. W., & Co., Chicago	South Bend, Ind., City	3½ per cent.	10 Avg.	20,000	101.310
Commercial Bank, Local	Tiffin, O., City	4 per cent.	15 Avg.	73,800	103.109
Livingston, Crawford, St. Paul	Chipley, Fla., Water Works and School	5 per cent. s. a.	20	10,000	100.150
First National Bank, Barnsville, O	Monroe, Neb., School	5 per cent.	10	2,150	101.441
First National Bank, Local	Kenton, O., Street Improvement	4 per cent. s. a.	4 1-3 Avg.	15,550	101.180
Davis, George W	West Coshockton, Pa., School	4 per cent.	2—10	1,200	103.000
Harris, N. W., & Co., New York	Lancaster, N. Y., School	3½ per cent.	1—20	40,000	100.650
Local	Titusville, Pa., Paving	3½ per cent.	10—20	6,000	Par.
Local	Titusville, Pa., Paving	4 per cent.	1—10	20,000	Par.
Ohio Valley Bank	Gallipolis, O., Street Improvement	4 per cent. s. a.	1—10 Ser.	10,000	101.030
Dulary, W. H	Paris, Mo., Electric Light	5 per cent. s. a.	5—20	20,000	109.400
Bank of Carrollton	Northport, Ala., School	6 per cent.	10—20 Opt.	1,500	101.000
City Comptroller	Buffalo, N. Y., City	3 per cent. s. a.	1	2,394	Par.
Crogan Bank, Local	Fremont, O., Water Works	4 per cent. s. a.	5—10 Straight	20,000	103.300
De Ridder, J. H., Saratoga Springs	Corinth, N. Y., Water Works	3 1-3 per cent.	5—26 Ser.	44,000	Par.
First National Bank, Local	Nephi City, Utah., City	5 per cent. s. a.	10—20 Opt.	8,000	Par.
Home Savings Bank, Albany	Voorheesville, N. Y., Water Works	4½ per cent. s. a.	5—21 Ser.	17,000	111.000
Kane & Co., Minneapolis	Hopkins, Minn., Water Works, gold	5 per cent.	2—16 Ser.	15,000	102.333
Kane & Co., Minneapolis	West Minneapolis, Minn., Water Works	5 per cent. s. a.	2—16 Ser.	15,000	102.333
Lock, F. S., Local	Baker City, Ore., Water Improvement	5 per cent.	20	20,000	Par.
McCurdy, R., Local	Youngstown, O., Paving, Grading	5 per cent. s. a.	4 1-12 Avg.	33,010	105.239
McCurdy, R., Local	Youngstown, O., Sidewalk	5 per cent. s. a.	2 1-12 Avg.	10,000	102.760
National Bank of Lawrence Co., Local	New Castle, Pa., Sewer	4 per cent. s. a.	1—2	30,000	Par.
Neligh, T. S	Laurel, Neb., Water	5 per cent. a.	5—20 Opt.	6,400	100.792
Sanderson, Tolef, Harmony	Glenwood, Minn., Water Works	4½ per cent. s. a.	20	15,000	103.000
Saugerties Savings Bank	Saugerties, N. Y., Water	3 4½ per cent.	1—27 Ser.	28,000	Par.
Todd, W. R., & Co., Cincinnati	Findlay, O., Second St. Improvement	4 per cent. s. a.	4 Avg.	7,000	101.070
Unknown	Mansfield, O., Orchard St. Improvement	5 per cent.	1—5 Ser	6,700	103.208
Unknown	Mansfield, O., Park Ave. Improvement	5 per cent.	1—5 Ser.	1,500	103.000
Unknown	Mansfield, O., Sheridan Ave. Improvement	5 per cent.	1—5 Ser.	1,000	104.000
Unknown	Newton, Pa., Fire House	3½ per cent. s. a.	30 Opt.	4,750	102.500
Provident Institution for Savings, Jersey City	North Bergen, N. J., School	5 per cent.	24½	14,000	114.070
Hahn, Geo. M	Hempstead, N. Y., Village	3½ per cent.	5—25 Ser.	50,000	Par.
Lowndes, R. T., & Co	Clarkesburg, W. Va., Sewering and Paving	4 per cent. a.	5—30 Opt.	40,000	102.500
Denison, Prior & Co., Cleveland	Marquette, Mich., Municipal Improvement	3½ per cent.	10	20,000	Par.
Todd, W. R., & Co., Cincinnati	Lorain, O., Paving	4 per cent. s. a.	5 1-3 Avg.	24,000	100.937
Farson, Leach & Co., New York	New York City, N. Y., Rapid Transit R. R., gold	3½ per cent. s. a.	48 Avg.	3,000,000	103.155
Kuhn, Loeb & Co., New York					
Gay, E. H., & Co., Philadelphia	South Fork, Pa., Street and Sewer	4 per cent. s. a.	5—30 Opt.	6,000	100.050
Kane & Co., Minneapolis	Howard, S. D., Water Works	5 per cent. s. a.	10—20 Opt.	10,000	Par.
Kean, S. A., Chicago	Garretson, S. D., Water Works	5 per cent. a.	20	5,900	102.500
O'Connor & Kahler, New York	Elmira, N. Y., Riverside Park	3½ per cent. s. a.	25	16,000	102.567
Provident Institution for Savings, Jersey City	North Bergen, N. J., School	5 per cent. s. a.	24½ Avg.	14,000	114.070
Williams, C. R., & Co., Pittsburg	Irwin, Pa., Grading and Paving	4 per cent. s. a.	18 1-3 Avg.	50,000	106.550
Blair & Co., New York	Houston, Tex., Paving, Sewers, School	5 per cent. s. a.	40	350,000	107.142
Sherrill, I. W., Local	Poughkeepsie, N. Y., Refunding	3½ per cent.	21¼ Avg.	250,000	100.750
Sherrill, I. W., Local	West Turin, N. Y., School	4½ per cent.		8,000	105.437
Second National Bank	Belvidere, Ill., Union Ave. Sewer	5 per cent. a.	4	700	101.110
Todd, W. R., & Co., Cincinnati	Nashville, Tenn., Trunk Sewer	4 per cent. s. a.	25	100,000	102.500
Hayes, W. J., & Sons, Cleveland	Nashville, Tenn., Street Improvement	4 per cent. s. a.	25	100,000	102.500
Chagrin Falls Banking Co	Chagrin Falls, O., Street Improvement	4 per cent. s. a.	5.2½ Avg.	15,000	100.810
Commercial National Bank, Local	Oshkosh, Wis., High School	3½ per cent. a.	5—15 Ser.	50,000	Par.
East St. Louis Trust Co	Granite City, Ill., Sanitary	5 per cent.	5—10 Opt.	14,000	105.000
First National Bank of Buchanan County	St. Joseph, Mo., School	3½ per cent. s. a.	19 2-3 Avg.	10,000	100.260
Jefferson Savings Bank, Local	Shepherdstown, W. Va., Electric Light	4 per cent. a.	10—30 Opt.	4,000	101.625
Kean, S. A., Chicago	Gallatin, Tenn., Water Works and Electric Light	5 per cent.	5—15 Opt.	6,000	100.350
McCurdy, R., Local	Youngstown, O., E. Woodland Ave	5 per cent. s. a.	2—6 Ser.	1,850	103.680
McCurdy, R., Local	Youngstown, O., Marion Ave.	5 per cent. s. a.	2—6 Ser.	1,600	103.510
Madison National Bank, Local	London, O., Electric Light	6 per cent. s. a.	15 Avg.	2,000	114.000
Rutland Savings Bank	Rutland, Vt., City Hall Improvement	3½ per cent. s. a.	30	20,000	104.770
Springfield Savings Society	Springfield, O., Street Improvemnet	6 per cent. s. a.	1—5 Ser.	15,178	104.160
Stafford, F. M., & Co., Chattanooga	Wilson, N. C., Street Pavings	5 per cent. s. a.	30	25,000	106.300
Snitzer & Co., Toledo	Atlantic City, N. J., Water	4 per cent. s. a.	30	70,000	108.500
Sherrill, I. W., Poughkeepsie	Lyons Falls, N. Y., School	4½ per cent. a.	15	8,000	105.437
Permanent School Fund	Llano, Tex., School	4 per cent. a.	5—20 Opt.	8,500	Par.

COMPARATIVE BIDS FOR CONSTRUCTION WORK

SEWERS

SAULT STE. MARIE, MICH.—Bids for building sewers were received as follows:

	Earth. 20,226 yds.	Boulders. 3,108 yds.	Rock. 6,821 yds.	Manholes.	Catch basins.	Drain wells.	Lumber.
J. H. Greene	$1.47	$3.25	$3.85	$1.70	$2.60	$8.00	$18.00
J. F. Arnott	1.60	3.35	4.00	1.75	2.00	12.00	19.50
R. W. Roberts	1.55	3.60	4.15	1.00	3.50	11.50	25.00
Jas. Healy	1.90	3.70	4.40	2.20	3.20	16.00	26.00
C. S. Beadle	.50	1.50	2.75	2.50	3.25	18.00	10.00

RESERVOIR

BOSTON, MASS.—Bids submitted for constructing Bear Hill reservoir at Stoneham:

	J. W. Weskill.	Moulton & Sancrier.	E. H. Eglee Co.	C. E. Trumbull & Co.	F. N. Lewis & Co.
Earth excavation, 12,000 cu. yds	$0.32	$0.50	$0.40	$0.43	$0.46
Rock excavation, 3,000 cu. yds	1.63	2.00	1.95	1.75	2.25
Portland concrete masonry, 1,000 cu. yds	7.00	8.00	7.00	7.65	5.85
Paving set in mortar-concrete, 200 cu. yds	2.15	5.00	3.00	5.00	4.60
Rip-rap, 100 cu. yds	2.00	2.00	1.50	2.00	2.00
Granite dimension stone masonry, 15 cu. yds	20.00	60.00	50.00	35.00	50.00
Laying 20 in. pipe, 320 lin. ft	.75	1.00	.80	1.50	.75
Laying 10 and 12-in. pipe, 100 lin. ft	.50	.75	.50	1.50	.65
Total	$16,950	$22,495	$19,456	$20,415	$19,575

WATER PIPE

TUCSON, ARIZ.—Bids for water pipe, hydrants, valves, etc., were received as below:

			L. Zeckendorf & Co., Tucson, Ariz.	A. M. Ozburn, Chicago, Ill.	Crane Co., Los Angeles, Cal.	Martin Pipe & Foundry Co.
6-in. iron pipe	7,250	lin. ft.	$5,510.00	$5,909.47	$5,867.60	$5,921.45
6-in. crosses	15	each	132.00	121.80	130.50	121.80
6-in. tees	15	"	114.00	110.25	118.12	110.25
6-in. valves	3	"	45.00	45.69	.....	.....
Stand hydrants	15	"	412.50	678.00	457.50	.....
6-in. plugs	30	"	19.20	21.00	22.50	21.00
Pig lead	6,000	lbs.	381.00	480.00	375.00	.....
Yarn	400	"	28.00	32.00	27.00	.....
Total			$6,641.70	$7,398.21	$6,998.22	.....

PAVING

HOUSTON, TEX.—Bids for street paving were submitted as follows. The bids are for a six-inch foundation of broken stone and cement, and all items of expense:

	Hipp & Key. Sheet Asphalt.	Uvalde Asphalt Co. Rock Asphalt.	Lucas, Shea & Humphreville. Vitrified Brick.
Congress, from Milam to Caroline	$26,169.65	$26,577.10	$24,639.82
Congress, from Caroline to Chartres	31,905.75	37,131.65	32,318.50
Preston, from Caroline to bridge	39,944.55	41,216.15	39,603.50
Preston, from bridge to Washington	13,286.00	13,452.00	12,368.00
Franklin, from San Jacinto to bridge	22,837.85	23,525.55	20,119.20
Travis, from Commerce to Texas avenue	24,204.95	25,103.95	21,176.15
Prairie, from Fannin to Travis	9,518.80	9,797.10	9,644.10
Commerce, from Fannin to bridge	13,952.05	14,260.55	13,972.90

DRAINAGE SYSTEM

NEW ORLEANS, LA.—Contract for lined and covered canals were submitted as follows (Algiers system):

Quantities.		Nash & Dowdle	J. McCoy, New Orleans.†	U. S. Const'n Co.	National Contracting Co.
Excavation delivered to spoil bank within 500 ft. or bk. fill	25,000 cu. yds.	$0.74	$0.53	$0.87	$0.85
Delivered to spoil bank beyond 500 ft., per additonal 1,000 ft.	7,000x2 "	.14	.06	.25	.10
Brick laid in mortar of 1 American nat. cement and 2 sand	3,000 "	7.85*	9.29*	7.75*	9.50*
Same in 1 Portland cement and 3 sand	3,000 "	8.98	9.54	8.75	10.00
Concrete-steel covers of conduits of 6-ft. span	1,000 sq. yds.	2.18	2.33	2.33	2.40
" " " " " 8-ft. "	200 "	2.60	2.75	2.75	3.00
" " " " " 10-ft. "	200 "	2.97	3.12	3.12	3.35
" " " " " 12-ft. "	100 "	3.33	3.48	3.48	3.60
" " " " " 14-ft. "	100 "	3.72	3.87	3.87	4.00
Concrete made of shells and mortar, 1 American nat. cement; 2 sand	2,100 cu. yds.	5.24*	4.89*	5.75*	6.50*
Same of 1 Portland cement and 3 sand	2,100 "	6.99	5.90	7.35	7.10
Concrete surfacing, ¾-in. thick, of 1 Portland cement and 1 sand	4,500 sq. yds.	.74	.54	.70	.65
Rolled steel beams, painted at mill and in the work	20 tons.	69.50*	60.00*	58.00*	61.00*
Wrought iron (same conditions)	1 "	73.00*	65.00*	80.00*	81.00*
Cast iron (same conditions)	15 "	55.00*	50.00*	55.00*	57.00*
Yellow pine piling driven	200 lin. ft.	.24*	.25*	.25*	.40*
Lumber for capping, flooring, etc., including iron	10,000 ft., B. M.	27.50*	24.80*	22.00*	30.00*
Cypress planking laid on sub-grade under foundations	250,000 "	21.00	17.00	21.00	18.00
36-in. vitrified clay pipe	1,800 lin. ft.	3.33	4.45	4.00	5.00
24-in. " " "	200 "	1.25	1.29	1.30	1.50
18-in. " " "	900 "	.85	.79	.73	.90
15-in. " " "	200 "	.60	.60	.52	.65
12-in. " " "	200 "	.49	.43	.43	.45
8-in. " " "	500 "	.29	.24	.25	.25
6-in. " " "	700 "	.19	.18	.20	.20
Oyster shells in place	500 cu. yds.	2.00	1.45	1.40	1.65
Sand in place	150 "	1.75*	1.50*	2.00*	1.85*
Cinders in place	150 "	2.00	1.17	1.35	1.75
Stone curbing removed, redressed and reset	100 sq. ft.	.20	.08	.12	.16
Lake shells in place	100 cu. yds.	2.00	1.92	2.50	2.10
New cypress curbing in place	40,000 ft., B. M	25.00	30.00	28.00	25.00
New stone curbing, 3 in. thick, in place	100 sq. ft.	.65	.45	.60	.60
Asphalt paving, taken up and relaid	100 sq. yds.	4.25	3.00	3.00	2.50
Vitrified brick pavement, taken up and relaid	100 "	1.95	2.50	2.20	1.60
Gravel pavement, taken up and relaid	100 "	.75	1.35	1.50	.60
Square block pavement, taken up and relaid	100 "	.95	.50	.75	.85
Cobblestone pavement, taken up and relaid	100 "	.30	.30	.65	.20
Total		$85,577	$78,561	$91,301	$92,959

* Alternate bids. † Awarded contract.

GAS STATISTICS IN AMERICAN CITIES

Including Those Having a Population of From 5,000 to 50,000 Given in Order of Population

City.	Population of city.	Population of district supplied.	Annual output in million cu. ft.	Number of meters.	Price. Light. Gross.	Price. Light. Net.	Price. Fuel. Gross.	Price. Fuel. Net.	Candle power.	Per cent. sold for fuel.	Number public lamps.	Price per year.	Hours per year lighted.
Oswego, N. Y.	22,199	22,000	16	1,500	$2.00	$1.80	$2.00	$1.50	18	25			
Newport, R. I.	22,034	25,000	70	2,500	1.50	1.30	1.50	1.30	18	25	500	* || $1.20	4,000
Bangor, Me.	21,850	20,000	30	1,500	2.00	1.60	2.00	1.60	20	15			
Petersburg, Va.	21,810	25,000	14	y 050	1.60	1.50	1.60	1 40	18	3			
Pittsfield, Mass.	21,766	23,000	23	910	2.00	1.60	2.00	1.50	25	20			
Lima, O.	21,723	23,000	20	875	1.50	1.50			25				
Watertown, N. Y.	21,696	22,000	25	1,600	2.00		1.50		20	20	26	* 36.00	4,000
San Jose, Cal.	21,500	25,000	30	2,200	1.75		1.75		18	40			
Roanoke, Va	21,495	20,000	9	618	2.00	1.75	1.50	1.25	18.2	26			
Mt. Vernon, N. Y.	21,228	105,000	421	13,797	1.70 to 1.20	1.50 to 1.20	1.35 to 1.20	1.25 to 1.20	22 to 26	30	3,429	* 18 to 28	4,000
Columbia, S. C.	21,108	24,600	15	780	2.25	2.00 to 1.75		1.50	25	25			
Colorado Springs, Colo.	21,085	25,000	40	1,800	2.00	1.80	1.10	1.00	22	60			
Wilmington, N. C.	20,976	25,000	10	500	1.75				16		56	24.00	†
Amsterdam, N. Y.	20,929	21,000	37	1,900	1.25	1.25	1.00	1.25	19	20			
Decatur, Ill	20,754	25,000	36	1,900	1.25	1.25	1.00	1.00	23	50			
Leavenworth, Kan.	20,735	23,000	45	1,600	1.25	1.25	1.00	1.00	17	60	112	||.90	
Waco, Tex.	20,680	20,868	15		2.00	1.90	2.00	1.50	17	30			
New Albany, Ind.	20,628	20,500	17	1,000	1.60	1.50		1.00	18	25			
Shenandoah, Pa.	20,321	18,000	4	220	2.50	1.80	1.50		22	3			
New Brunswick, N. J.	20,006	20,000		-	1.50	1.40			26		385	* 21.00	All n't.
Winona, Minn.	19,714	9,000	27	1,100	2.00	1.80		1.25	18	10	75	* 22.00	2,000
Sandusky, O.	19,664	20,000	40	1,800	1.25		.80		21	50			
Newport News, Va.	19,635	20,000	30	1,050	1.60	1.60	1.00	1.00	19	60	51	* 29.00	4,000
Concord, N. H.	19,632	16,000	35	2,400	1.60	1.50	1.60	1.50	24	35	113	* 12.00	1,463
Rock Island, Ill.	19,493	83,500	47	1,700	2.00	1.25	2.00	1.25	22	50			
Niagara Falls, N. Y.	19,457	20,000	10	600	2.00	1.20	2.00	1.20	18	40	31	* 30.00	4,000
Paducah, Ky.	19,446	19,000	20	825	1.50		1.00		18	30			
Evanston, Ill.	19,259	22,000		4,200	1.25	1.00	1.25	1.00	23	55	288	* 18.00	†
Chicopee, Mass.	19,167	15,000	20	946	2.25	1.75	2.25	1.50	22	50	14	|| 1.50	†
Madison, Wis.	19,164	19,164	52	2,625	1.75	1.50	1.50	1.25	22	68	46	* 27.00	§
Port Huron, Mich.	19,158	22,000	45	1,975	1.40	1.25	1.00	.80	24	55			
Lynchburg, Va.	18,891	28,000	25		1.45	1.35	1.45	1.35	18	25			
Green Bay, Wis.	18,684	18,000	18	900	1.50		1.00		18	40			
Northampton, Mass.	18,643	15,000	25	1,000	2.00	1.50	2.00	1.50	19				
Burlington, Vt.	18,640	18,640	21	1,260	2.00	1.30 to 1.80	1.25	1.00	21—23	40			
Galesburg, Ill.	18,607	18,607	50	1,567	2.00	1.00			19.5	20	5	* 30.00	4,000
Battle Creek, Mich.	18,563	20,000	30	1,230	1.60 to 1.20	1.28 to .96	1.60 to 1.20	1.28 to .96	18				
Richmond, Ind.	18,226	20,500	30	1,300	1.50	1.20	¶	¶	22—27		51	* 20.00	2,250
Shamokin, Pa.	18,202	20,000	3	175	5.00 to 1.50		3.00 to 1.10		28	30			
Ottumwa, Ia.	18,197	18,000	16	650	1.50	1.35	1.50	1.35	18	25			
Newark, O.	18,157	*20,000	10	500	1.50	1.35	1.00		24	25			
Lafayette, Ind.	18,116	20,000	26	1,570	1.25	1.25	¶	¶	22		20	* 20.00	3,000
Charlotte, N. C.	18,091	22,000	26	1,300	1.50	1.50	1.25	1.25	23	25			
Portsmouth, O.	17,870	17,890	23	985	1.50	1.35	1.50	1.35	18	18			
Penascola, Fla.	17,747	17,800	17	1,150	2.10	2.00	1.60	1.50	25	25	186	* 18.00	2,500
San Diego, Cal.	17,700	18,000	30	1,200		1.95		1.95	18—22	40			
Perth Amboy, N. J.	17,699	20,000	13	750	2.00	1.70	2.00	1.70	20	35			
Mansfield, O.	17,640	18,000	35	1,550	1.50	1.25	1.25	1.00	22—25	40			
Lebanon, Pa.	17,628	18,000	13	670	2.00		1.50		19	15	16	* 38.40	4,000
Columbus, Ga.	17,614	18,000	15	775	1.35 to 1.85	1.25 to 1.75	1.20 to 1.35	1.10 to 1.25	20	27	5	* 15.00	2,200
Findlay, O.	17,613	20,000	¶ 300	2,600	.30	.25	.30	.25		90			
Eau Claire, Wis.	17,517	20,000	16	850	1.60	1.50	1.60	1.20 to 1.50	22	30			
Stockton, Cal.	17,506	20,000	36	1,650	2.00		1.75		22	32			
Belleville, Ill.	17,484	20,000	25	881	1.50	1.25	1.25 to 1.00	1.15 to 1.00	22	15			
Portsmouth, Va.	17,427	25,000	19	738	1.75	1.50	1.25	1.00	17.6	20			
Norwich, Conn.	17,251	20,000	21	1,500	1.75	1.55	1.26		18	25			
Moline, Ill.	17,248	83,500	47	1,700	2.00	1.25	2.00	1.25	22	50			
Cumberland, Md.	17,128	20,000	20	968	1.60	1.50	1.20	1.00	19.5	38			
Lockport, N. Y.	16,581	20,000	36	1,700	1.70	1.50	1.50	1.00	19	40	90	* 17.50	3,800
Danbury, Conn.	16,537	20,000	40	904	‡.06		‡.05	‡.03	40				
Danville, Va.	16,520	8,000	31	813	1.00	.75	1.00	.75	16.2				
Lansing, Mich.	16,485	20,000	34	1,550	1.50	1.35	1.10	.99	22	40			
Danville, Ill.	16,354	20,000	2		2.00	1.75	1.75	1.50	18	20			
Marinette, Wis.	16,195	16,000		130	1.50		1.00			10			
Lorain, O.	16,028	16,000	20	717	1.10	1.00	.80		18	60			
Stamford, Conn.	15,997	16,000	22	1,200	2.00	1.75	1.40	1.22	22	12			
El Paso, Tex.	15,906	15,900	12		2.25		2.00		18	20			
Tampa, Fla.	15,839	25,000	12	325	2.25	2.00	2.25	2.00	21	25	323	* 27.00	2,549
Atchison, Kan.	15,722	17,000	15	820	1.75	1.50	1.50	1.25	18	66			
Pottsville, Pa.	15,710	16,000	15	1,050	2.00	1.60	1.25		22	3			
Plainfield, N. J.	15,369	20,000	34	1,700	1.50	1.40	1.50	1.25	22	20			
Rome, N. Y.	15,343	15,400	16	700	2.00	1.00		1.50	18	25			
Sedalia, Mo.	15,231	15,250	12	710	1.80	1.62	1.50	1.35	18	50			
Elkhart, Ind.	15,184	19,000	50	1,289	1.80 to 1.15		1.20 to 1.15		23.5	65			
Fond du Lac, Wis.	15,110	15,000	15	750	2.00	1.75	1.50	1.25		50			
Jacksonville, Ill.	15,087	15,000	24	1,000	2.00	1.50	2.00	1.50	18	20			
Appleton, Wis.	15,085	15,000	14	520	2.00	1.35	2.00	1.35	18	35			
Vicksburg, Miss.	14,834	18,000	18	1,462	2.40	2.25 to 2.00		1.75	22	25	28	* 33.00	†
Michigan City, Ind.	14,850	15,000	22	1,100	1.60 to 1.40	1.50 to 1.30	1.10	1.00	18	50			
Keokuk, Ia.	14,641	15,000	15	800	2.00	1.50	2.00	1.25 to 1.00	23	20			
Alexandria, Va.	14,528	17,000	25	1,034	1.30	1.20	1.30	1.20	18				
Middletown, N. Y.	14,522	9,000	16	800	2.00 to 1.60		1.00		22	20	79	* 15.00	All n't.
Jackson, Tenn.	14,511	18,000				2.00		1.35					
Ann Arbor, Mich.	14,509	14,500	40	2,200	1.60	1.44	1.25	1.00	18	60			
Newburyport, Mass.	14,478	15,000	18	893	1.60	1.50			18				
Steubenville, O.	14,349	15,000	15	600	1.30	.90 to 1.20	¶.80		18		9	30.00	4,000
Manistee, Mich.	14,260	14,000	5	140	1.50		1.50		20				
Woburn, Mass.	14,254	6,000	11	575	1.80	1.50			18.9				
Hazelton, Pa.	14,230	15,000	7	335	1.50			1.25	22—24	16			4,000
Alton, Ill.	14,210	8,000	10	500	1.60	1.50	1.10	1.00	18	50			
Cheyenne, Wy.	14,087	15,000	8	290	3.00	2.70	1.50		16	48			
Streator, Ill.	14,079	16,000	13	640	2.00	1.50	2.00	1.50	18—20	20			
Meridian, Miss.	14,050	16,000	10	475	2.00		1.50		18	20			
Bridgeton, N. J.	13,913	14,000	22	1,100	1.10	1.00	1.10	1.00	18	50			
Beverly, Mass.	13,884	12,000	12	782	1.70	1.50	1.70	1.50	18		6	22.20	

* Includes repairs, etc. † Lighted by moon scale. || Per 1,000 feet. § To 12 M. ‡ Per hour. ¶ Naturalgas. y Number of consumers. (From Brown's Directory of American Gas Companies. By courtesy of the publisher.)

(Continued in November.)

RECENT INVENTIONS

679,586—*Street Car Fender.* George Wray, Pittsburg, Pa

679,619—*Gas Ventilator for Mains.* Milton C. Henley, New York, N. Y.

679,658—*Receptacle for Garbage or Ashes.* George C. Witt, Cincinnati, O.

679,733—*Hose Nozzle.* Charles W. Edgell, Gardner, Mass.

679,739—*Method of Fire-Proofing Wood.* Joseph F. Geisler, New York, N. Y.

679,754—*Car Ventilating Apparatus.* Clarence O. Johnson, New York, N. Y.

079,841—*Police Nippers.* George A. Harrison, Lafayette, Ind.

679,860—*Fire-proof Partition for Buildings.* Samuel E. Rabbitt, Washington, D. C.

679,946—*Extensible Fly-Escape.* Adoniram J. Collar, Yreka, Cal.

680,016—*Shut-Off Nozzle for Firemen's Hose.* James M. Baker, Providence, R. I.

680,062—*Construction of Floors, Partitions, or the Like.* Valentine Moeslein, New York, N. Y.

680,084—*Automatic Fire Extinguisher.* Joseph Tessier and Zoel Sevigny, New Bedford, Mass.

680,157—*Letter Box.* Alanson M. Keeney, Adrian, Mich.

680,178—*Street Car Fender and Brake.* Thomas M. Sanderlin, Norfolk, Va.

680,212—*Car Fender.* Nathan Abrahams, St. Louis, Mo.

680,250—*Push-Wagon for Street Cleaning Purposes.* Thomas Hill, Jersey City, N. J.

680,500—*Fuel-Saving and Smoke-Consuming Device for Furnaces.* John J. Quinn, New York, N. Y.

680,568—*Gas-Lamp Lighting or Extinguishing Apparatus.* Vitorio Croizat, Turin, Italy.

680,740—*Post.* James W. Snedeker, Adrian, Mich.

680,784—*Process of Manufacturing Gas.* William J. Knox, Pittsburg, Pa.

680,810—*Well-Drilling Machine.* Samuel J. Reed, Onset, Ark.

680,847—*Mail Box.* Preston E. Englar, Taneytown, Md.

680,856—*Street Sweeper's Cart.* Frederick Haberman, New York,

680,902—*Filter.* Robert T. Weaver, New York, N. Y.

680,911—*Letter Box.* John E. Costello, Providence, R. I.

680,912—*Fire-Resisting Door and Door Frame.* Alphonse De Man, Detroit, Mich.

680,955—*Car Fender.* Jefferson D. Wintz, New Orleans, La.

680,992—*Apparatus for Purifying Water.* Jules Delattre, Dorignies-Flers, France.

681,083—*Water Meter.* Levi P. Treadwell, Danbury, Conn.

681,127—*Fire Alarm System.* Charles E. Lombard, East Wilton, Me.

681,157—*Conduit.* Charles A. Wanner, Philadelphia, Pa.

681,208—*Ash-Can.* Robert Frame, Newport, R. I.

681,248—*Paving-Block.* John McLachlan, Chicago, Ill.

681,289—*Apparatus for Rendering Water Pure and Palatable.* John S. Wrightnour, Oil City, Pa.

681,293—*Electric System for Railways.* Daniel S. Bergin, Chicago, Ill.

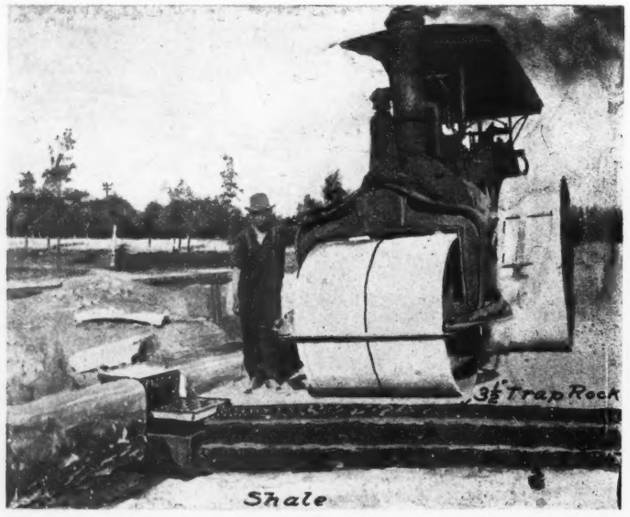
681,514—*Street Sweeper or Cleaner.* Otto Schumann, Philadelphia, Pa.

AMONG THE MUNICIPAL WORKERS

The People Who Make the Modern City Possible—Information of Importance to City Officials and Others

THE "STANDARD" CATCH BASIN

CLEVELAND has recently improved one of its suburban roads—the one known as the "Clifton Road"—making of it a beautiful drive. It is picturesquely located upon the bluff overlooking Lake Erie and has been carefully constructed after the most approved specifications for building a macadam roadway. Its situation and the fact that many handsome residences are to be found upon either side lends a charm to this driveway which is seldom found in those surrounding other municipalities.

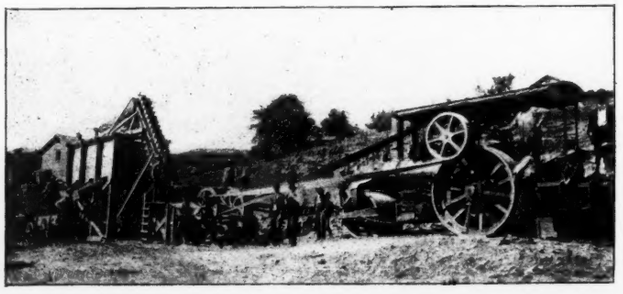


Owing to local conditions the gutters and sewers had to be constructed with unusual care and for the same reasons the sewer appliances, such as catch basins, inlets, etc., were selected with the utmost discrimination as to the merits and value of different makes. After long consideration of the subject those which are manufactured by the American Municipal Supply Company, of Cleveland, O., were specified as possessing the qualifications best adapted to the particular needs of this roadway. The accompanying illustration shows the style of the inlet to the catch basin and the manner in which it is imbedded in the curb.

NOVEL USE OF A ROAD ROLLER

IN these days every small town, not to mention the cities, is favoring the good roads movement, and anything which will benefit the cause is seized upon with avidity. Many of them have not the means with which to purchase a complete equipment of road making machinery, for this reason the novel scheme which the city of Galena, Ill., has hit upon to materially reduce the first cost of a road building outfit is likely to be followed elsewhere.

Instead of purchasing an engine to run its stone crusher the city

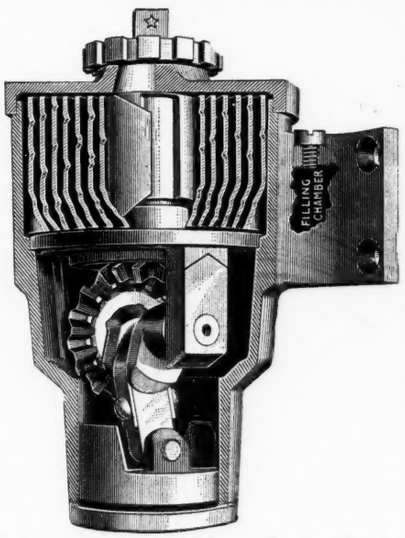


used the Kelly road roller, which it already owned, to furnish power to operate the crusher, and, in this way, the necessity for an engine has been done away with and economy in the equipment for this branch of the city work materially promoted, very much to the satisfaction of the taxpayers. The accompanying illustration shows the plant at work. What one city has done another can do. The crusher was made by the Austin Western Company, Ltd., Chicago, Ill.

* * *

THE GERMAN CENSUS, which started December 1, 1900, and has just been finished, gives some interesting facts. There are 442 cities with a population between 10,000 and 100,000 each. In 1816 the German Empire had 24,833,000 inhabitants; in 1855, 36,114,000; and in 1900, 56,345,000. In the year 1816, Prussia had 13,709,000 inhabitants; in 1855, 21,320,000; and in 1900, 34 463,000. The enormous increase in the large cities of Germany is said to be due to the retrograde movement in agriculture, which has driven people from the country.

LIQUID DOOR CHECK AND SPRING



THE average municipality is much interested in modern inventions which can be utilized in the construction, equipment and maintenance of public buildings. Anything which tends to save city property generally meets with approval, for this reason it is easy to understand how the Ogden liquid door check and spring has come into popular use in all public buildings.

The Ogden always closes the door without slamming, and protects it from the careless person and the boisterous school children who handle doors rather roughly. The Ogden is made in various sizes so that it is readily adapted to fit any size of door.

It is unexcelled in strength, durability and simplicity. It has recently been improved by the addition of an automatic regulating valve on the inside of the check. This regulator is to the door check what the governor is to the steam engine, it regulates and fully controls the action of the check, and the movement of the door at all times and under all conditions.

The Ogden check's extensive use by the United States Government, City School Boards and the best architects, speak volumes for its qualities. Ellis Island, United States Emigrant Station of New York, and many other public buildings in New York and elsewhere are supplied throughout with Ogden checks. The accompanying illustration will give a fair idea of the check and a trial will convince the most sceptical. A request sent to The Ogden Mfg. Company, Newark, N. J., will bring an illustrated catalogue.

A REMEDY FOR ONE STREET NOISE

MUNICIPAL art involves much more than is commonly included by the average person who thinks of that phrase; it means completeness, adaptation, the use of the best means for the producing of a desired result. For example, it is absurd for a city to go to the large expense of laying a fine asphalt pavement and then mar its surface by the use of the old style man-hole covers. And yet many cities have made the blunder of using the noisy iron cover in place of the noiseless, asphalt filled man-hole covers and frames which are made by the Greger Manufacturing Company, Washington avenue, Philadelphia, Pa. The noiseless cover is the one, and the only one which has thus far been invented, which will eliminate the objectionable rattling and noise of the old style cover. Its use in Philadelphia and other large cities has been most satisfactory and has added just that element which is needed to make the asphalted street as perfect as possible. Mr. William H. Brooks, Chief of the Bureau of Highways, of Philadelphia, has recommended that annual appropriations be made by Councils until all the old iron manhole covers have been replaced by the noiseless cover.

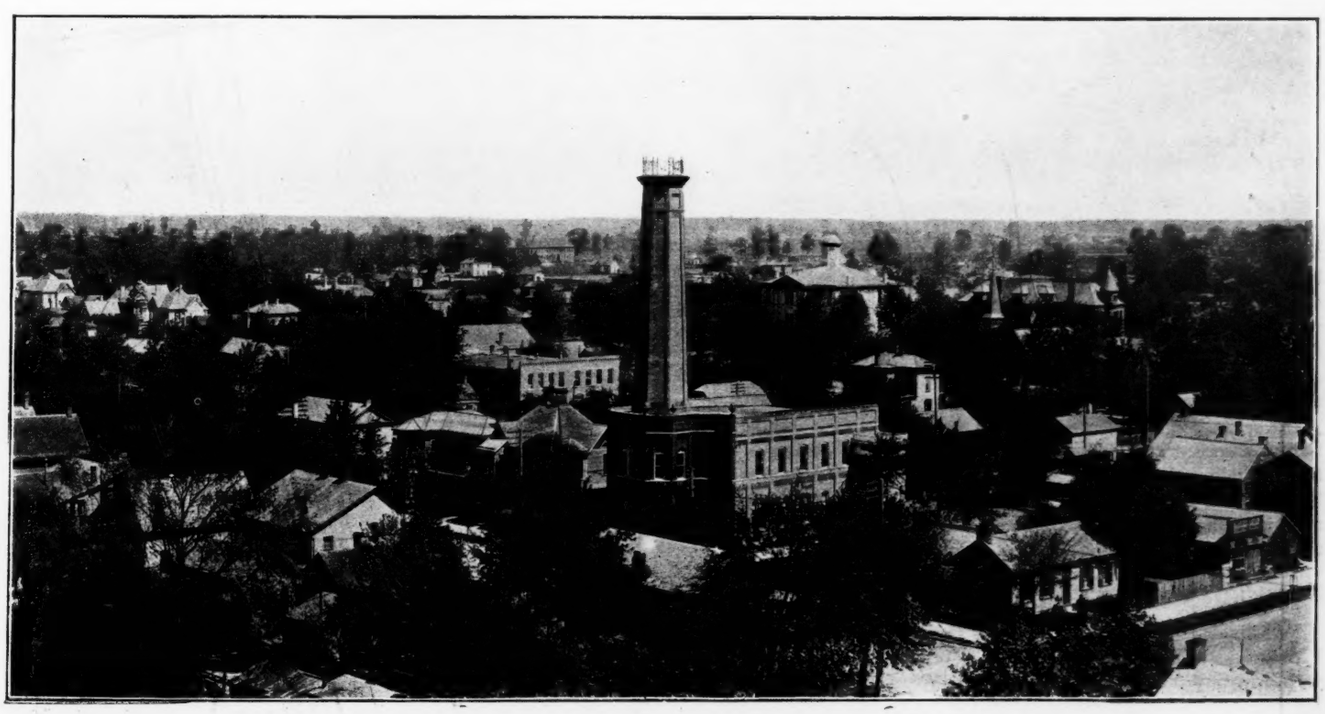
CENTRAL STATION HEATING SYSTEMS

IN the days of our grandfathers the well was the common source of water supply, each family having its own well; to-day the families of large and small communities are served by a system of mains and pipes from a central plant. Gas and electricity, served from a central station, have superceded the old time systems of lighting and there is no reason why heat should not be as successfully distributed to a large number of patrons in the modern city. The fact that central heating stations have been established in scores of cities already would indicate the speedy adoption of this mode of heating American homes.

One of the most recently constructed plants is that which was completed at Washington Court House, O., not long ago, under the direction of Col. Isaac D. Smead, who patented the system installed.

This central station, which is located in the centre of the accompanying birds-eye view of that thriving Ohio city, has a capacity of 300 houses and is a two-story and basement building. As the building is located in the center of the residential district the second story has been leased by the authorities for use as a public library.

The court house, jail and sheriff's residence, business houses,



CENTRAL STATION, SMEAD HOT WATER SYSTEM, WASHINGTON COURT HOUSE, OHIO

hotels, churches, schools and residences will be heated. More than a mile of street lines has already been laid.

The company contracts to warm buildings twenty-four hours in the day, seven days in the week, from summer to summer, at but a slight advance over previous cost, and, in some cases, at a cost much less than previous expenditures. County authorities have installed pipes and radiators and made a ten-year contract for the warming of the county buildings.

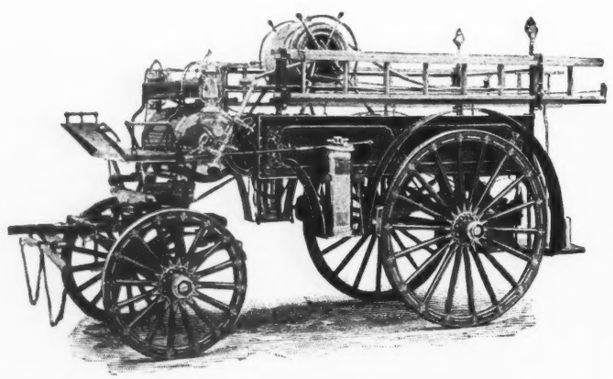
The first time the water was turned into the county buildings a complete circulation was established in twelve minutes and the temperature of the water in the radiators in the court house was the same as at the central station in even less time.

The installation of this central heating station tends to make the progressive Ohio city one of the desirable places of residence in the state, for it not only heats a large number of residences from a common center, but eliminates the smoke nuisance in as many instances. The success of this plant was assured from the time the idea was presented to the citizens and since its installation the demands for an extension of its street lines are much in excess of the original intentions of the company. It is apparent that the plant will have to be enlarged in the near future.

ROLLER BEARING AXLES IN DEMAND

American fire-fighters beat the world as fire-fighters, but only because they have the best appliances and apparatus. The modern inventors in the fire field have left little for their successors to achieve, it would seem, when the perfection of the present apparatus is considered. Horseless engines, life saving nets, rubber tires and roller bearing axles, not to mention the steam and chemical engines, have made the work of the modern fire-fighter less burdensome and a 100 per cent. more effective than it was or could be twenty-five years ago.

The up-to-date chiefs throughout the United States are seeking to introduce the new ideas and the new apparatus. It is no wonder, therefore, that Chief Kendall, of Detroit, is having the roller bearing



axles put on all of his old apparatus as well as demanding roller bearings for all new apparatus purchased for the department. Evidently he knows a good thing when he sees it. The progressive chief realizes that roller bearings greatly reduce the pull and eliminate that disagreeable side motion which is so common with the old style axle. The old style axle needed constant attention and oiling, while the roller bearing axle only needs attention three or four times a year. This axle has been in use for over five years in some of the leading departments, long enough to demonstrate its superiority over the old style with respect to its durability. The axle is manufactured by the Grant Axle and Wheel Company, of Springfield, O., and the accompanying illustration shows a combination hose wagon belonging to the Dayton department which is equipped with the Grant axle.

EXHIBITS MUNICIPAL ELECTRICIAN'S MEETING

The exhibits at the convention of the Association of Municipal Electricians at Niagara Falls, N. Y., were very interesting. A room was set apart for the purpose of displaying them. In front of the International Hotel an exhibition was given involving the appliances of the Montauk Fire Detecting Wire Company, of New York, and the Monarch Fire Appliance Company of the same place. A large box of kindling wood was saturated with oil and fired. The Montauk Fire Detecting Wire was run through it and when the flames reached the wire the alarm was given. Then the Monarch fire extinguisher, "Kilfyre," was sprinkled over the flames and the fire was out.

The United States Storage Battery Company had an interesting exhibit of their storage batteries.

A neat match safe was the souvenir of the Gamewell Fire Alarm and Telegraph Company of New York.

The Carborundum Company, of Niagara Falls, N. Y., distributed pocket-knife sharpeners made of their product.

J. J. Jones & Sons, of New York, had an elaborate exhibit of electrical supplies.

The Sprague Electric Company, of New York, had a fine display of conduits.

Other manufacturers represented at the meeting were: The Circular Loom Company, of Boston; the Okonite Company, New York; the Gordon Battery Company, New York; the Safety Insulated Wire and Cable Company, New York; the Edison Manufacturing Company, of Orange, N. J.; American Vitrified Conduit Company, New York; Kellogg Switchboard Company, Chicago, Ill.; John A. Roebling Sons Company, Trenton, N. J.

DEVELOPMENT OF RUSSIA

At the initiative of Czar Nicholas II, the Imperial Russian Government, under the immediate charge of Prince Khilkoff, the Minister of Public Works and Railways, who is well known in the United States, where he acquired his early professional training by practical experience with the principal American railways for a number of years, has been and is now energetically improving a number of the large rivers within the empire so as to receive ocean vessels. The government is also enlarging and modernizing its ancient canal and internal waterway systems, originally founded by Peter the Great.

Of greater importance to the people of the United States is the fact that the government of Russia has vigorously entered upon the construction of several ship canals which will ultimately form connecting links for the transport of ocean steamships and war vessels entirely within the Empire of Russia, the systems radiating from St. Petersburg. When these canals and waterways are completed, modern ocean steamships and war vessels will be able to traverse the interior of the Russian Empire from the White Sea to the Baltic Sea, passing through Lakes Onega and Ladoga and the Gulf of Finland; from the Baltic Sea, by way of the Duna and Dnieper Rivers to the Black Sea; from the Black Sea to the Sea of Azov, and, by way of the Don and Volga Rivers, to the Caspian Sea.

From a naval and military point of view, these waterways have become indispensable to the Russian Empire. They will also add enormously to the prosperity and growth of the empire, as they will form the most economical means of transport for the surplus food products from the interior of the Russian Empire to the adjacent foreign consumers. These great waterways will also enable the economical transport of the foreign goods and manufactures which the Russian Empire now needs for its development.

The growth and development of the Russian Empire during the past hundred years is phenomenal and is only rivalled by that of the United States, but in population and area the Russian Empire already exceeds that of the United States by more than 100 per cent. Its great and virtually inexhaustible natural resources are just beginning a new era of great development, and the Imperial Russian Government generously welcomes foreign enterprise to assist in the necessary development of the empire.

The advantages of the Scherzer Rolling Lift Bridges for these great river and canal improvements were brought to the attention of the Russian officials and engineers who visited the United States several years ago with a view of studying and adopting in Russia the most approved methods of railroad, waterway and canal constructions. The interests of the Scherzer Rolling Lift Bridge Company, of Chicago, within the Russian Empire have become so extensive as to require the establishment of permanent general offices at St. Petersburg. Mr. Eduardovitch O. Gagen, who is a subject of the Russian Empire, and who has for a number of years been connected with Russian consulates and has made an extensive study of American in-

stitutions, engineering and business methods, has been appointed a special representative of the Scherzer Rolling Lift Bridge Company for the Russian Empire, and is now on board the Hamburg-American line steamship Fuerst Bismarck, for Hamburg, Germany, from which port he will proceed to Russia. After visiting all of the important seaports and waterways of Russia, Mr. Gagen will return to the United States by way of the Trans-Siberian and Chinese Eastern Railroads. He will also visit a number of the principal seaports and cities in Japan, with a view of further developing the business of the Scherzer Rolling Lift Bridge Company already established there.

Mr. Gagen will return to Chicago by way of the Pacific route, and it is expected that his mission will require about a year.

THE SMITH PREMIER AT PAN-AMERICAN

THE Smith Premier Typewriter Company made notable exhibits at the World's Columbian Exposition in Chicago, the Trans-Mississippi Exposition at Omaha, the Paris Exposition of 1900, and has one of the most attractive displays at the Pan-American Exposition at Buffalo. The booth is a combination of Greek and Roman architecture; the pillars and frame work are finished in white with gold trimmings; the ceiling and side curtains are of heavy pink silk, handsomely festooned, and the background of arch work at the top of the booth, and the decorative rosettes are of yellow silk. Polished brass scroll work with gates of brass occupy the space between the pillars on the two aisle fronts, being finished off with plate glass mirrors.

The Smith Premier Company were the first to take up the most approved system of touch typewriting which is now being used in so many of the business colleges throughout the country. This company made demonstration of the new method at the Paris Exposition, and to all intents and purposes introduced this new method abroad. For their demonstrator at the Paris Exposition they had Miss Marian Reichardt, who is giving similar demonstrations at Buffalo, assisted by Miss Nora Biurvall, both young ladies using Smith Premier machines having blank key boards. The company have hit upon a novel method of entertaining those who are interested in typewriting who visit the booth, having placed a large phonograph in the center of their space. On rolls which are used in the phonograph are the wordings of testimonial letters given the Smith Premier Typewriter Company by the largest users of Smith Premier machines. When the phonograph is in operation it reads these letters to the young lady touch operators who take the dictation direct on the blank key board machine by the touch method. The plan is a novel one and interests the spectators.

The Smith Premier Company exhibit machines fitted to meet the requirements for writing in the following languages: French, Spanish, Italian, Russian, German, Polish, Swedish, Portuguese, Norwegian and Siamese. These different machines are placed on brass trimmed plate glass shelves with plate glass mirrors for background. The entire exhibit is one that reflects credit on the designer as well as on this well known typewriter company.

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TRADE PUBLICATIONS

—The Ericsson Series, Vol. I, Part 6, is ready for delivery, and contains some interesting information about telephones. It can be had by addressing the Ericsson Telephone Company, 296 Broadway, New York City.

—How to use soft coal of any grade without violating smoke-nuisance ordinances is explained in a 20-page booklet, illustrated, issued by The Orvis Down Draft Boiler and Furnace Company, 277 Broadway, New York City.

—H. W. McDonald & Son, of Galion, O., have issued two handsome catalogues. One deals with the latest sewer specialties and the other with the "star" sewer inlet, and one hundred other designs. Both catalogues are well illustrated.

—A beautiful photo-engraving, nine and a half by twelve and a half inches, with a calendar attached is being sent out by The Harper-Norton Shale Brick Co., Conneaut, Ohio. The subject is, "The Flight of Time." If once seen it is appreciated. Send for one; it will please you.

—In a well-printed small-sized pamphlet of twelve pages the North American Paving Company, 171 LaSalle street, Chicago, Ill., give reasons for using asphalt rock in the construction of asphalt pavements. As for itself, as a company, "it meets all competition in price and surpasses all competitors in quality."

—If you want to learn about Artesian Wells and how to use torpedoes in developing them, it will be well to communicate with Elisha Gregory, 60 Liberty street, New York, and ask for his "Torpedo Circular." It is a 20-page booklet with illustrations which will tell you all that you desire to know about the subject.

—The Alphons Custodis Chimney Construction Company, Bennett Building, New York City, issue an illustrated catalogue of over one hundred pages, which is not only full of useful information about this subject, but shows that this company is known the world over, for it has constructed chimneys in almost every important city on the globe.

—The latest publication of the Joseph Dixon Crucible Company, Jersey City, N. J., is characteristic with their previous literature. It is a 78-page catalogue, descriptive and beautifully illustrated, showing the principal graphite productions of this well-known company. No prices are given in this catalogue, but a special price-list will be sent upon request.

—The Studebaker Brothers Mfg. Company, of South Bend, Ind., have issued a patriotic 24-page catalogue, with a handsome red cover, well illustrated, entitled, "In Six Wars." It shows how their wagons, of various types, have been utilized in the last six great wars which have occupied the attention of different parts of the world. It can be had for the asking.

—A charming little brochure, of thirty pages, artistically bound with embossed cover, and profusely illustrated, tells about the McRoy conduit for putting electric wires underground. Fifteen million feet of this conduit have already been laid underground in different cities in the United States. It contains a lot of information which is of interest to every American city.

—The Federal Asphalt Company, New York Life Building, Chicago, Ill., have issued a 29-page prospectus which epitomizes a few of the facts relating to the American supply of asphalt which is found in such large quantities in the rock formation in central Kentucky, not far from the famous Mammoth cave. It tells a story which will interest those who wish to be informed on this subject.

—In a 16-page pamphlet, Mr. George C. Warren, of Utica, N. Y., tells about the origin and development of asphalt as well as about asphalt pavement construction. Mr. Warren is one of the famous family of Warrens who have made a life-long study of asphalt and its uses. The Warrens were the first to occupy the American field to any appreciable extent. A request for a copy sent to Mr. Warren, Clarendon Building, Utica, N. Y., will secure a free copy.

—The Snead & Company Iron Works have issued a handsome catalogue of thirty-six large pages, ten by fourteen inches, which is superbly illustrated with interior library views, showing how extensively their book stack and shelving is used in this country. This steel shelving has many virtues which are clearly set forth in this beautiful catalogue, and the fact that it has been adopted in the best libraries in the country is sufficient guarantee of its utility and quality. It was designed and patented by Mr. Bernard R. Green, C. E.

—Few catalogues have been as artistically gotten up as that recently issued by The Mark Equipment Company, of Chicago, Ill. Every page is a blue print, and while the merits of the various street railway equipments are sufficiently explained in the small amount of text that appears on each page, each article is graphically portrayed by means of a blue print, which tells what many words would inadequately describe. To add to its beauty, a charming little river, woods, street or some other scene is included on each page, which gives an artistic finish to the whole affair that is seldom found among the higher grade of trade publications of this class. To cap the climax it is bound in a padded green morocco leather which gives it an elegant finish as a whole.

EXHIBITS AT WATER WORKS ASSOCIATION

THE exhibitors at the meeting of the New England Water Works Association held at Portland, Me., September 18-20, were few, but had many interesting displays. Among those in evidence were:

The Thompson Meter Company, with a fine exhibit of their meters.

The Hersey Manufacturing Company showed an especially large number of Hersey meters.

The National Water Meter Company had samples of the Empire and Crown meters.

The Union Water Meter Company was represented by its President, Mr. J. P. K. Otis, and exhibited a fine assortment of Columbia and Union Rotary Meters, regulators and other appliances.

H. Mueller Manufacturing Company displayed their Columbia tapping machines, stop-cocks and patented appliances. Souvenirs in the shape of a pocket-book were given out.

Sweet and Doyle showed illustrations of their Vincent valve.

Campbell Brass Company, of Erie, Pa., displayed a patent corporation box.

The Garlock Packing Company gave out wire key rings and pencils to the members.

The International Steam Pump Company was represented by Mr. George J. Foran, who had prepared lists of the members present with corresponding numbers for identification, which were attached to the convention badges.

The Portland Water Company, through its representative, Mr. Wescott, gave a dinner to the members at the New Falmouth Hotel.

The ball-bearing gate stand, shown by H. L. Weston, of the Coffin Valve Manufacturing Company, of Neponset, Mass., was of special interest to the members. The Walker Rubber-faced gate hydrant is a valuable piece of apparatus. Among its many qualities may be mentioned its durability, ease by which it may be repaired, absence of water hammer, and the fact that its operating rods cannot be buckled.

The A. P. Smith Manufacturing Company showed its Rapp plug among its other exhibits.

Mr. Henry Millholland represented the Darling Pump and Manufacturing Company.

Mr. Henry F. Jenks, whose drinking fountains are so well known, had charge of the exhibits.

Others present were The Neptune Meter Company, the Rensselaer Manufacturing Company and the Lead Lined Iron Pipe Company.

TRADE NOTES

—The Maslins, of 165 First street, Jersey City, N. J., are doing a rushing business in new and second-hand contractors' drainage and sewer pumps.

—The mailing chute which is made by the Cutler Manufacturing Company, of Rochester, N. Y., is one of the appliances which is indispensable to the modern city building.

—Wendell & MacDuffie are among the best known corporation purchasing agents for steam, electric railway supplies, etc., in the United States. Their address is 26 Cortlandt street.

—For railway, power and lighting electrical equipment the General Electric Company, of Schenectady, N. Y., stand in the front rank. A visit to Schenectady would convince the most skeptical.

—The card index and similar office contrivances are an absolute necessity in business, whether public or private. The Yawman & Erbe Manufacturing Company, of Rochester, N. Y., make a full line of these goods.

—Messrs. Galgano Brothers have been awarded a contract for paving Le Count Place in New Rochelle, N. Y., with the creo-resinate wooden paving block, manufactured by the United States Wood Preserving Company, 29 Broadway, N. Y.

—The "machined" chilled wheels for steam and electric service, made by the New York Car Wheel Works, Buffalo, N. Y., still grow in popularity. It will not be long before the half million mark, in the aggregate number of wheels furnished, will have been passed.

—The J. G. Brill Company, Philadelphia, are known the world over as the great builders of cars and trucks for electric railways. They captured two Grand Prizes at Paris in 1900 and are likely to carry off the honors at the Pan-American this year, and at St. Louis in 1903.

—The Sprague Electric Company, New York City, are the only conduit manufacturers in the world who make a complete conduit system, including all accessories required from outlet to outlet. Interested city officials will find their catalogue of considerable value. It can be had for the asking.

—The need of air brakes is urgently felt by the citizens of Birmingham, Ala., owing to the recent killing of a woman and child by a street car which would have been avoided if the car had been equipped with an air brake. These air brakes are made by the Christensen Engineering Company, Milwaukee, Wis.

—The book typewriter makes it possible to condense all public records into the smallest space, which is a growing necessity. Many city clerks, recorders, engineers, etc., are finding this typewriter a great economizer in time, space and expense. It is made by the Elliott & Hatch Book Typewriter Company, 256 Broadway, New York City.

—Mr. T. H. Boorman has been awarded by the War Department the contract for covering building No. 13, Governor's Island, with 6,000 square feet of the Trinidad Asphalt Manufacturing Company's asbestine fire-proof roofing with interlocking lap. He has also delivered to the Navy Yard, Brooklyn, a quantity of sheathing felt for ship repairs.

—Springfield, Mass., has contracted with the United States Wood Preserving Company of New York City to repave a large portion of Main street, which is now paved with granite block. The creo-resinate wooden block, which is manufactured by that company, will be used. This is the company which have laid large quantities of their pavement in Boston during the past two seasons with such satisfactory results.